## Oil and Gas Leasing on Portions of the Wyoming Range in the Bridger-Teton National Forest

Draft Supplemental Environmental Impact Statement Volume 2: Appendix

Sublette County, Wyoming



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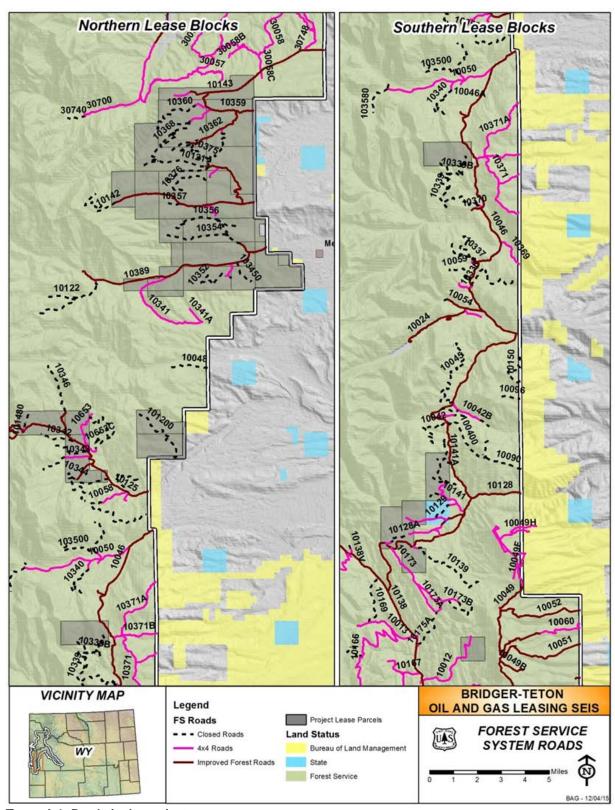


Figure A-1. Roads in the project area

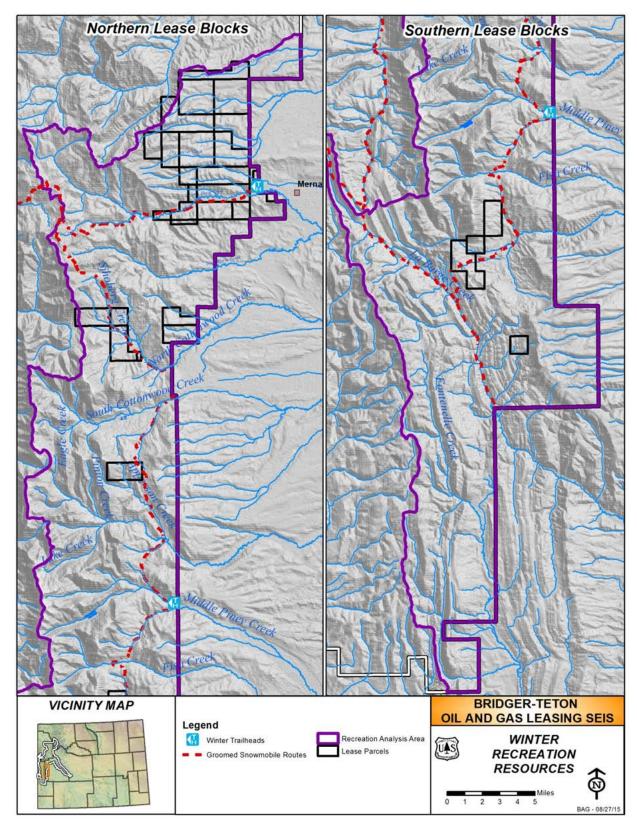


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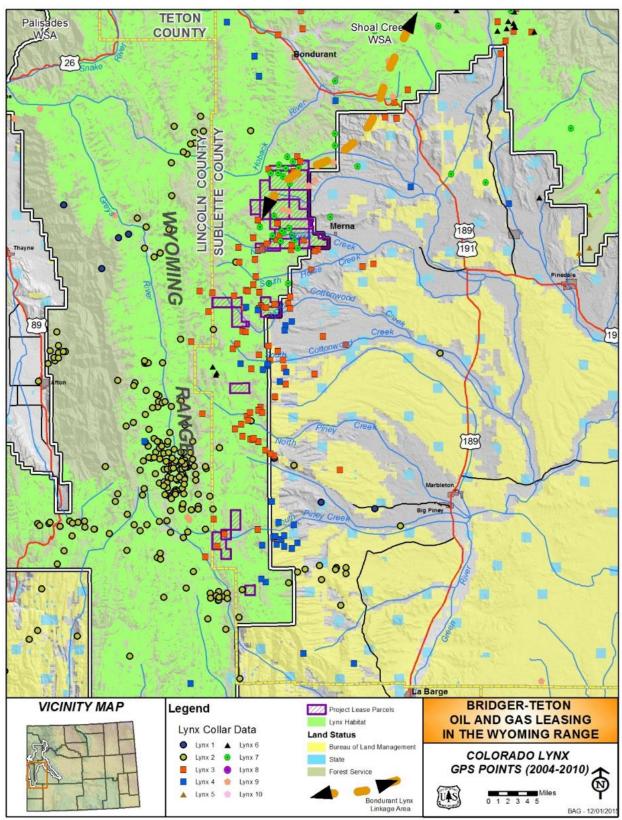


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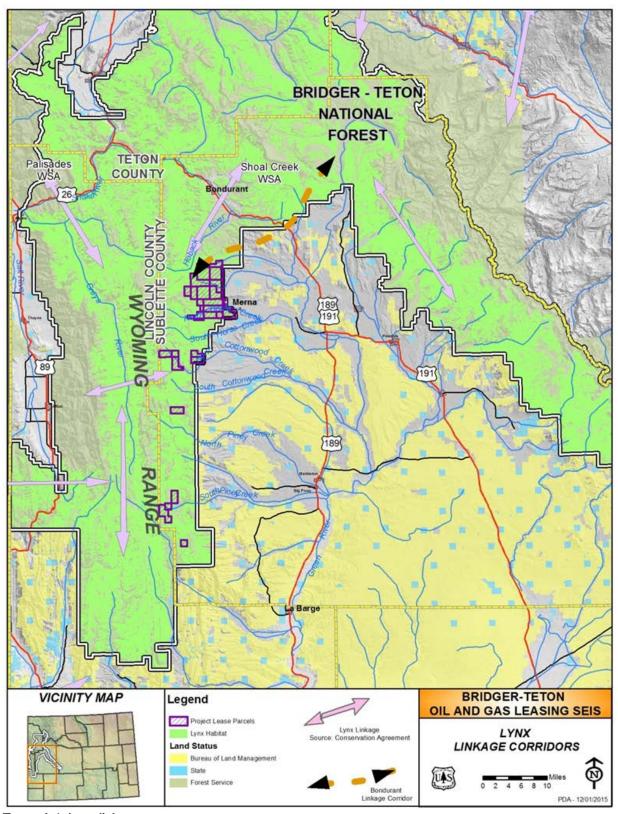


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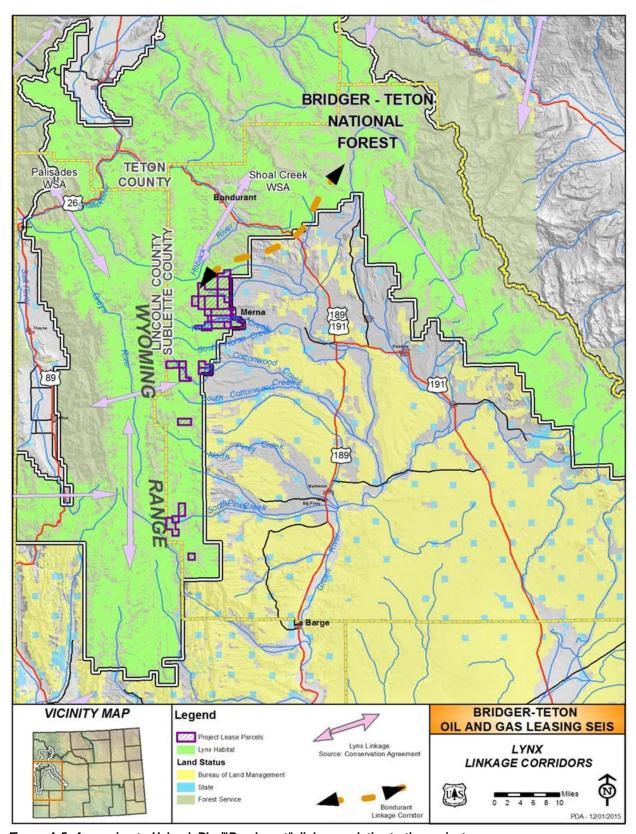


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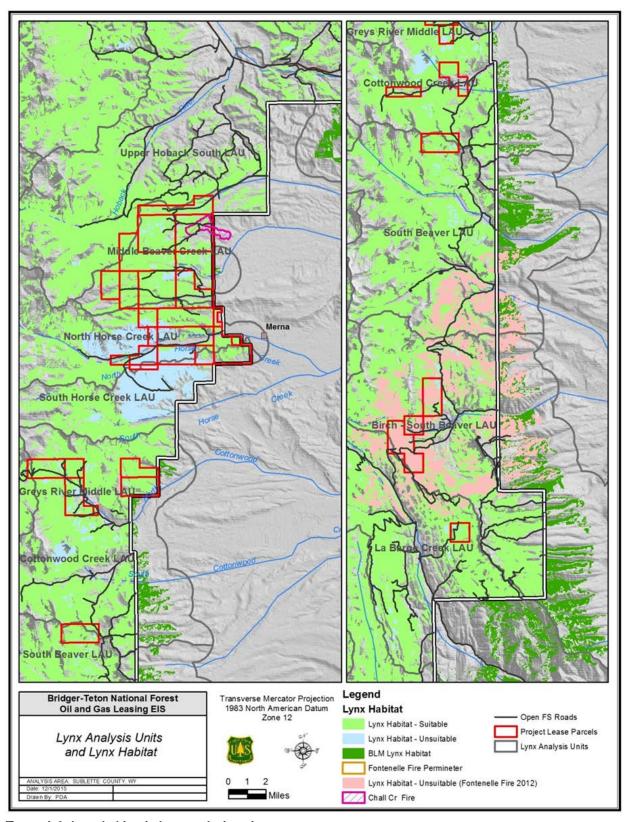


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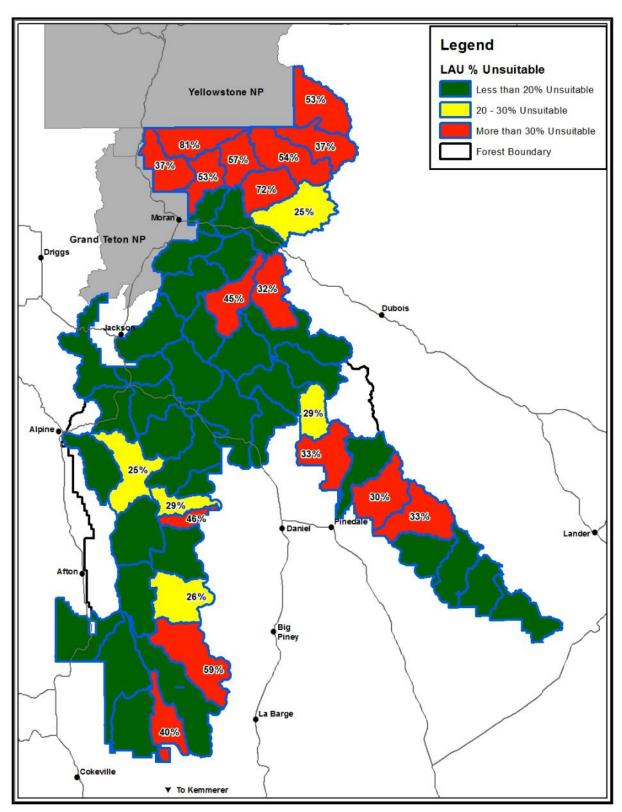


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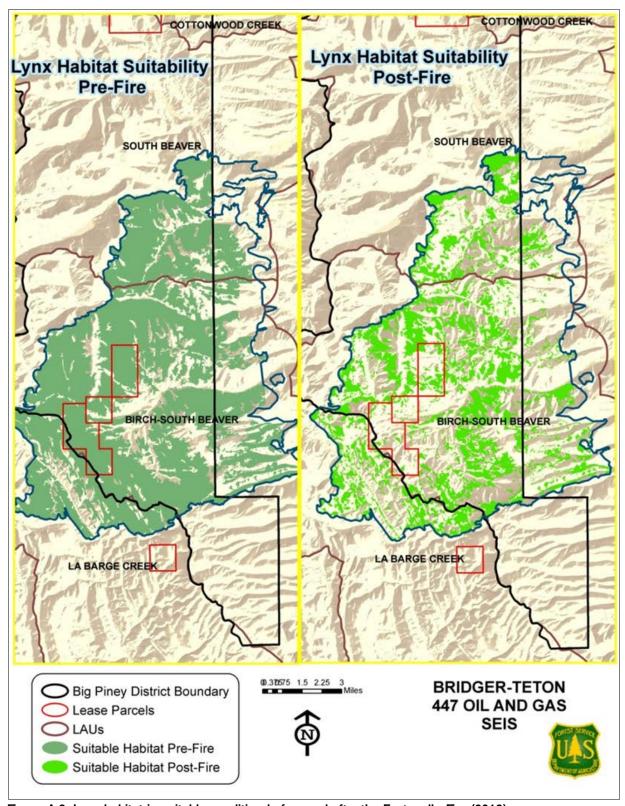


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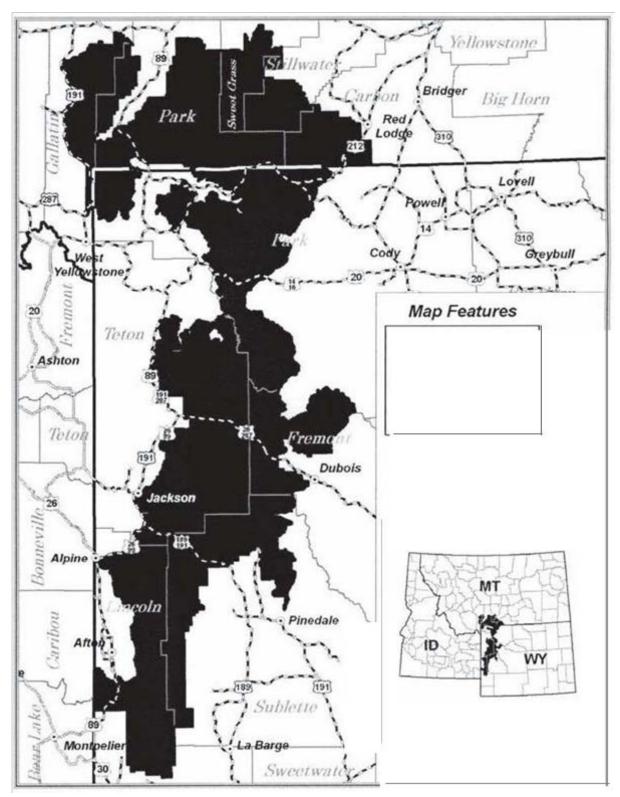


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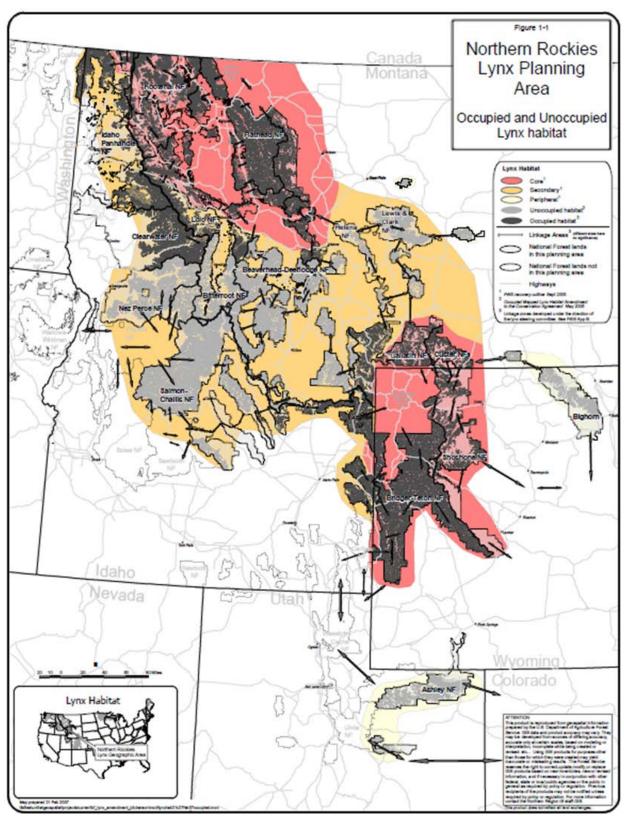


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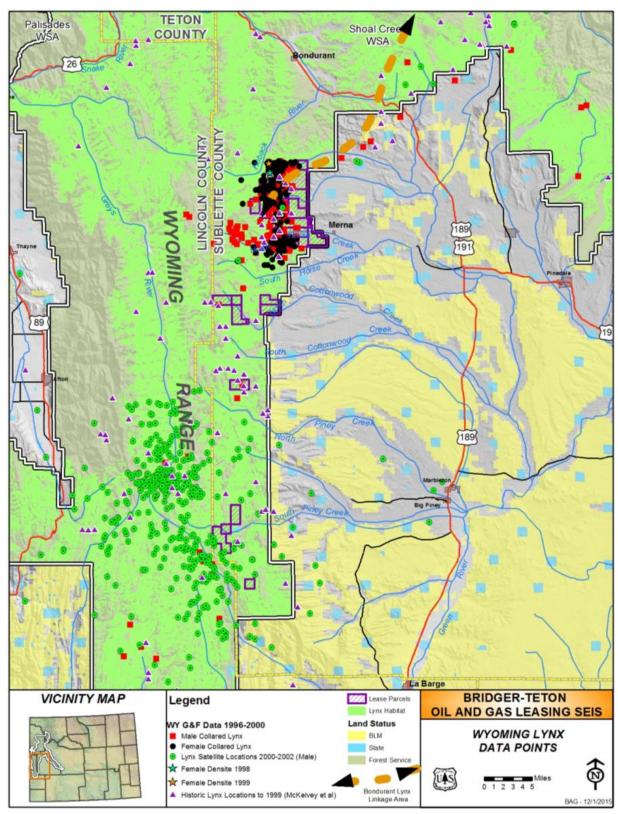


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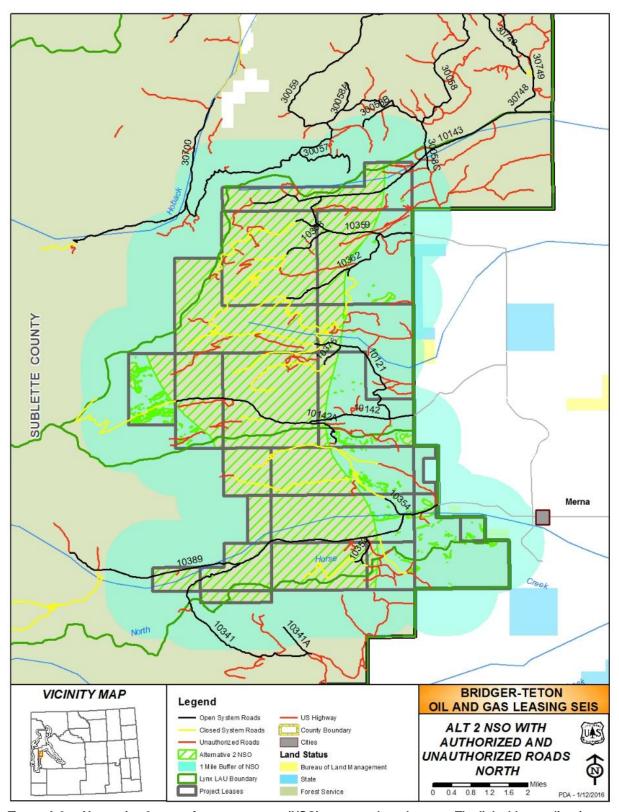


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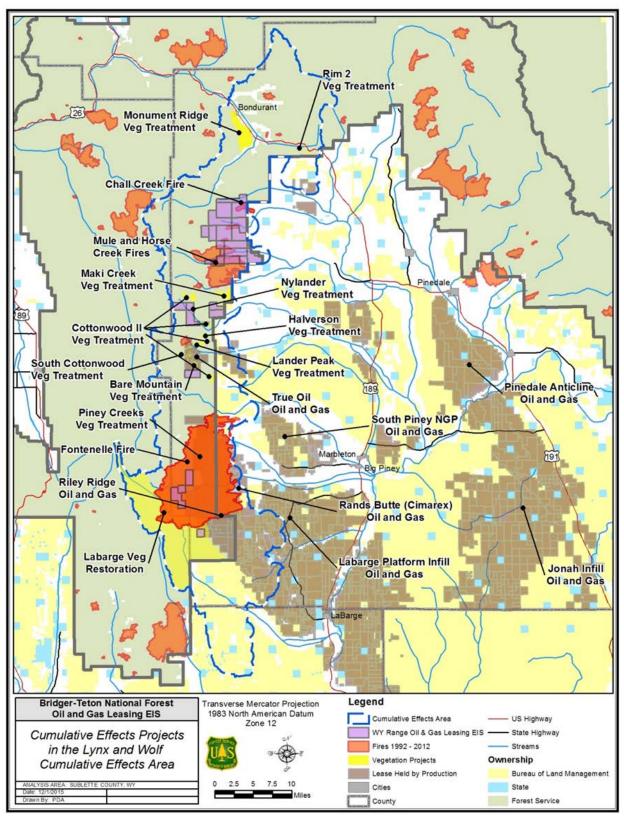


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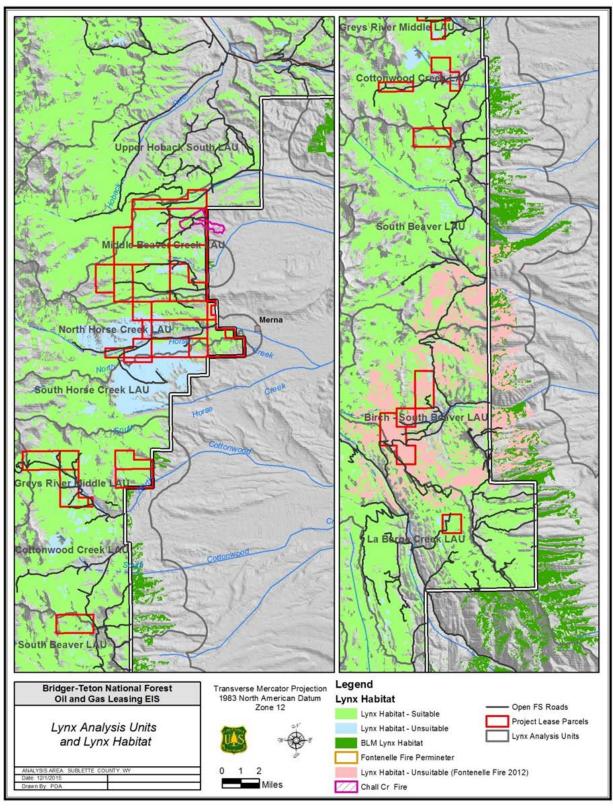


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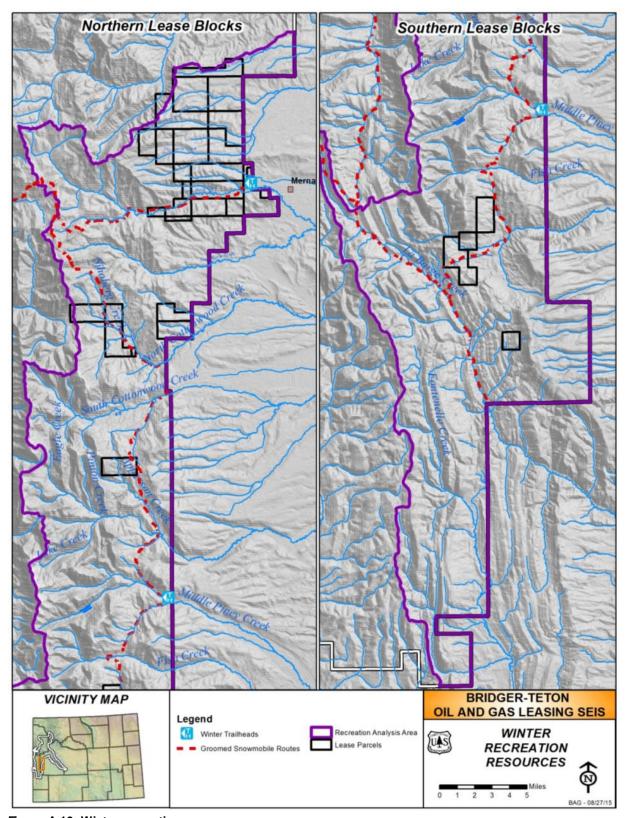


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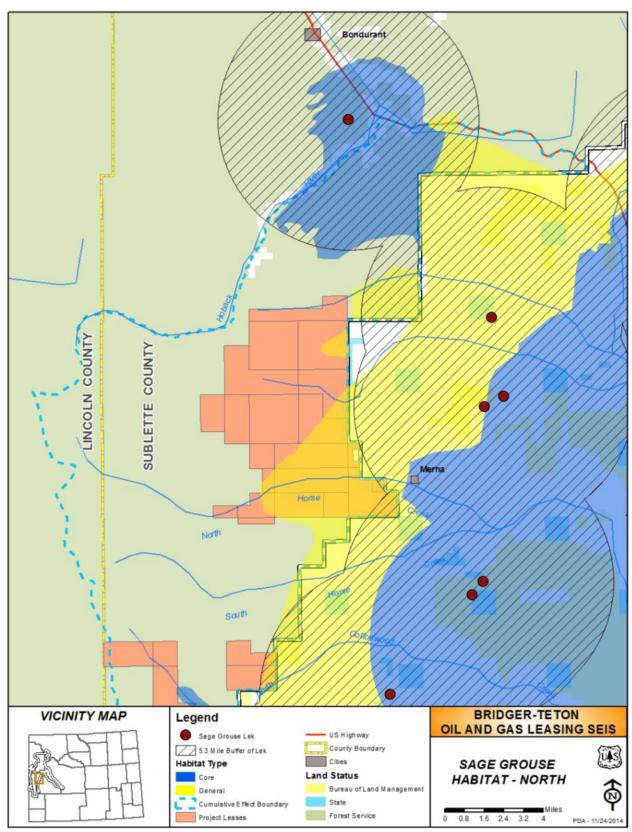


Figure A-14. Proposed "preliminary priority" and "preliminary general" sage-grouse habitat on Bridger-Teton National Forest lands, north

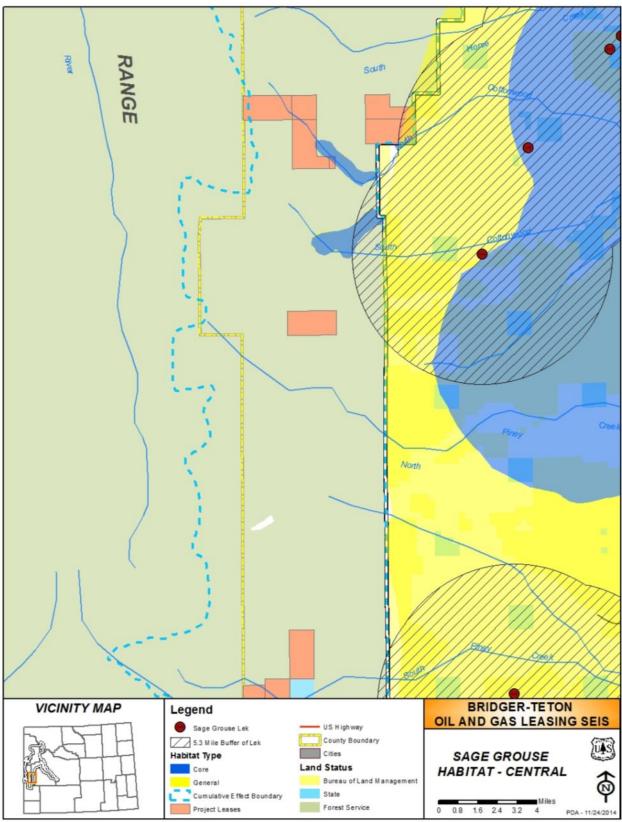


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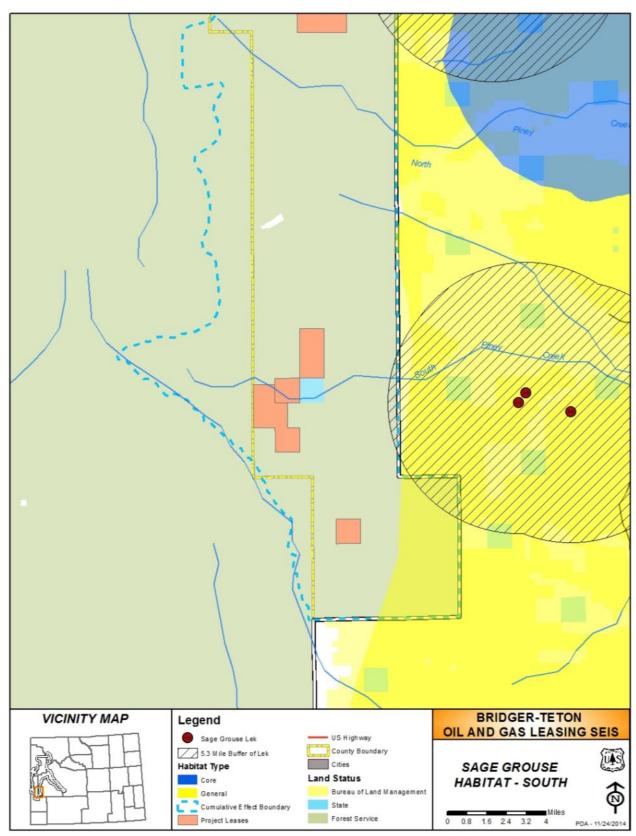


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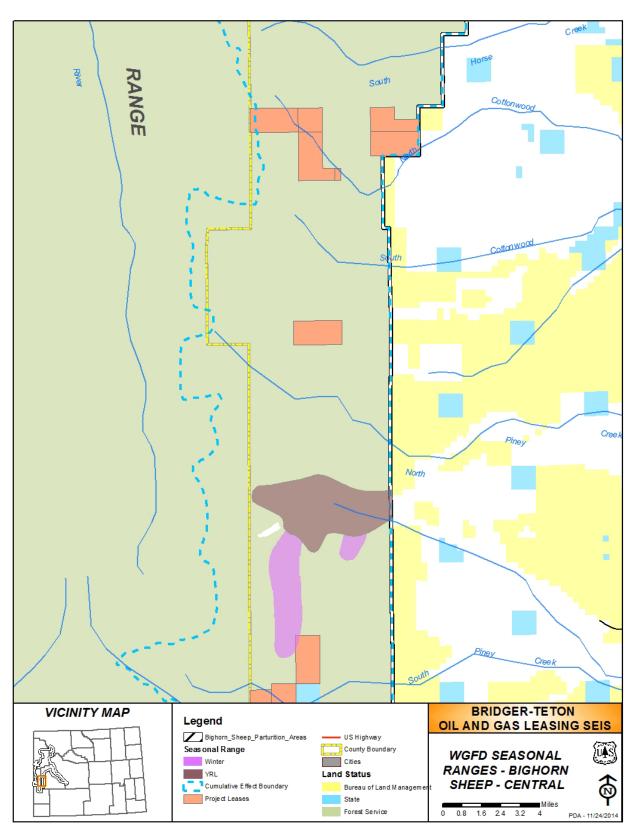


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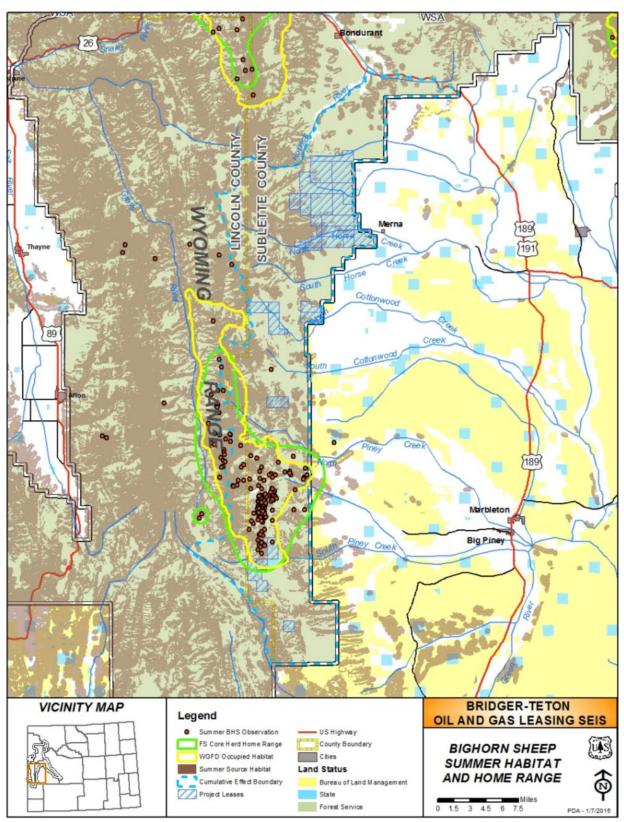


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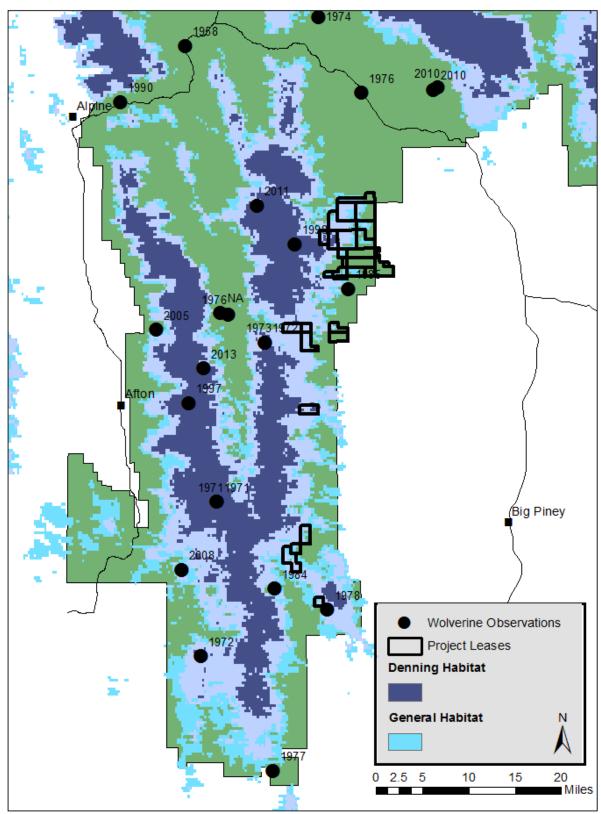


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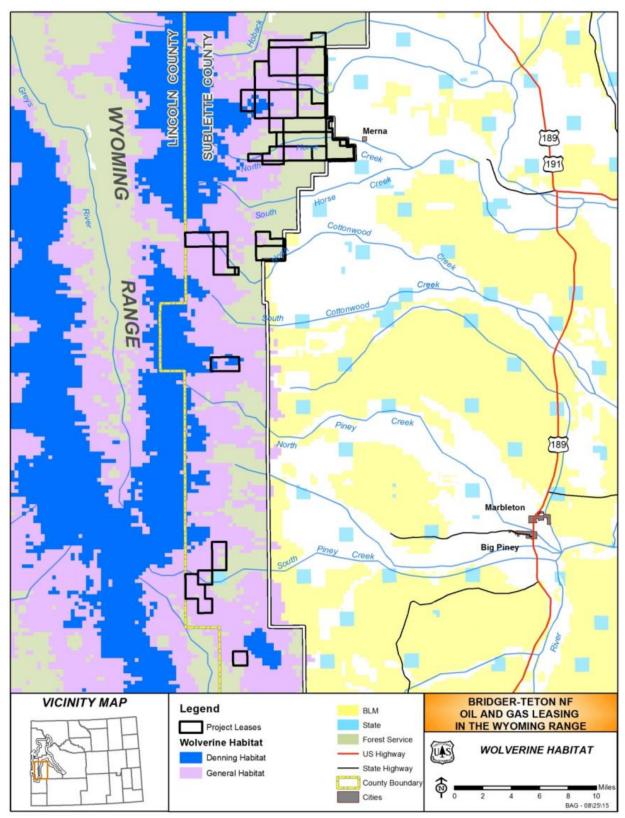


Figure A-20. Modeled wolverine habitat in the Wyoming Range

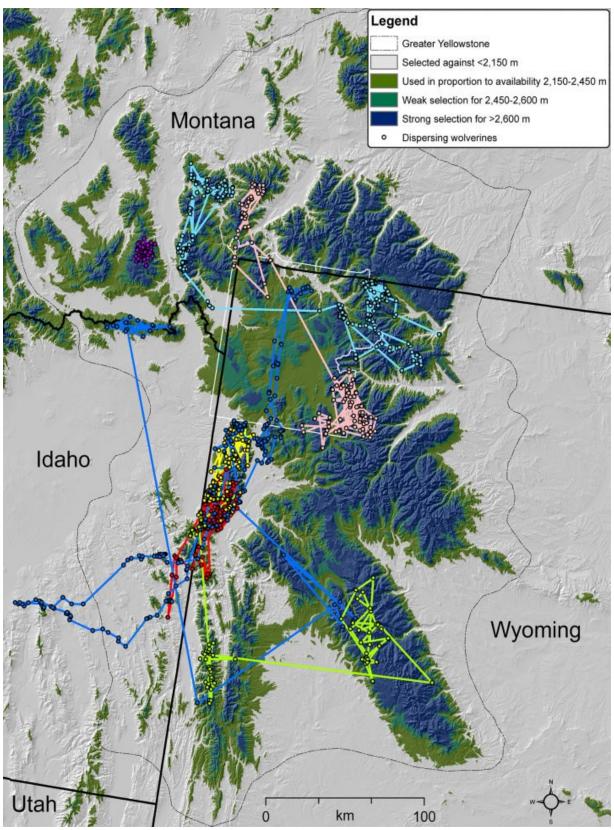


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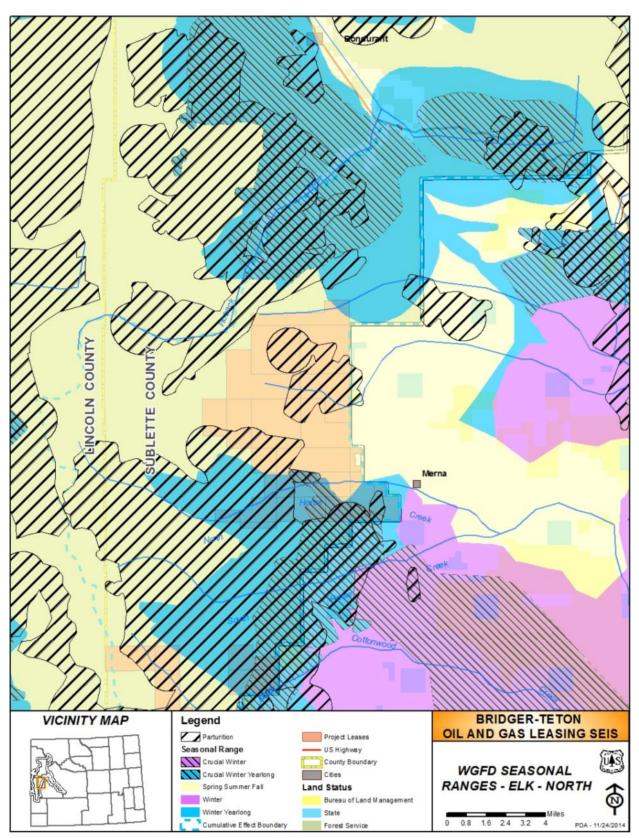


Figure A-22. Provisional seasonal range of elk, north

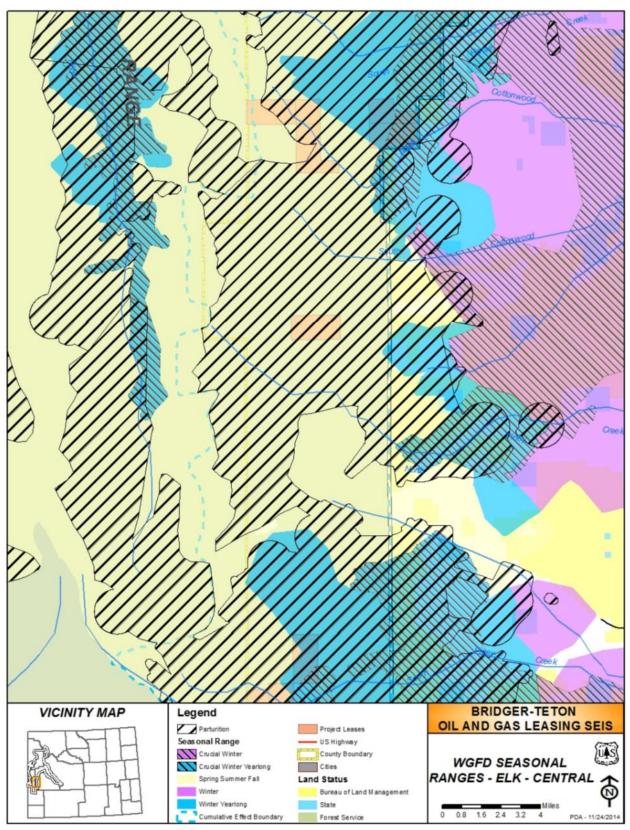


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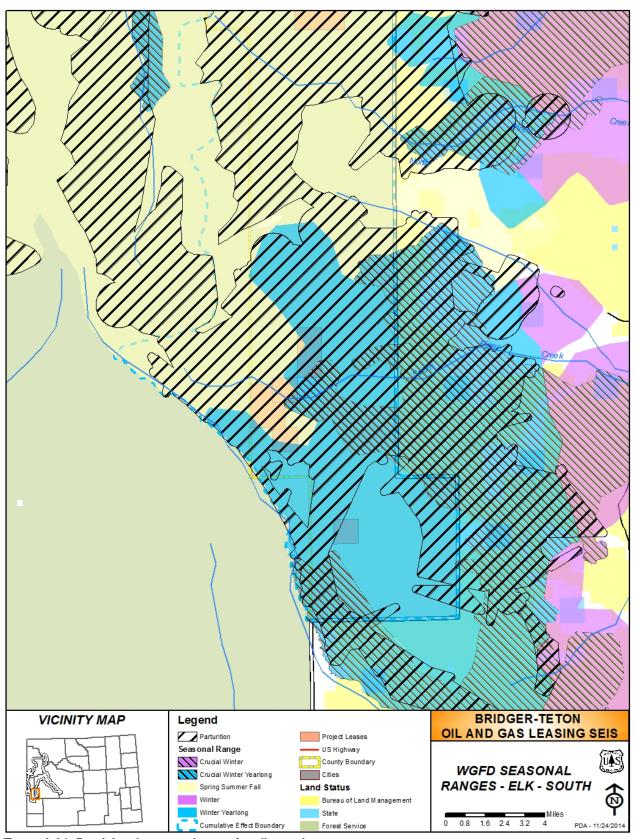


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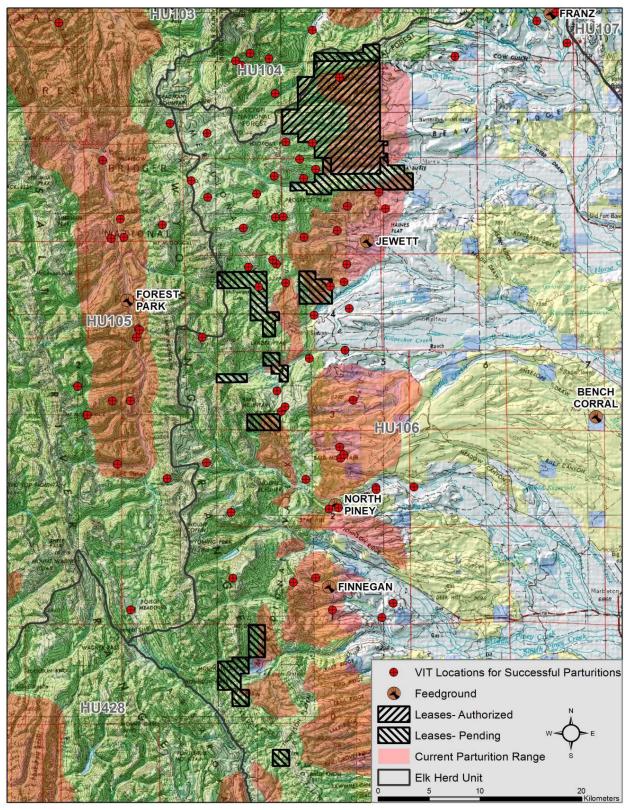
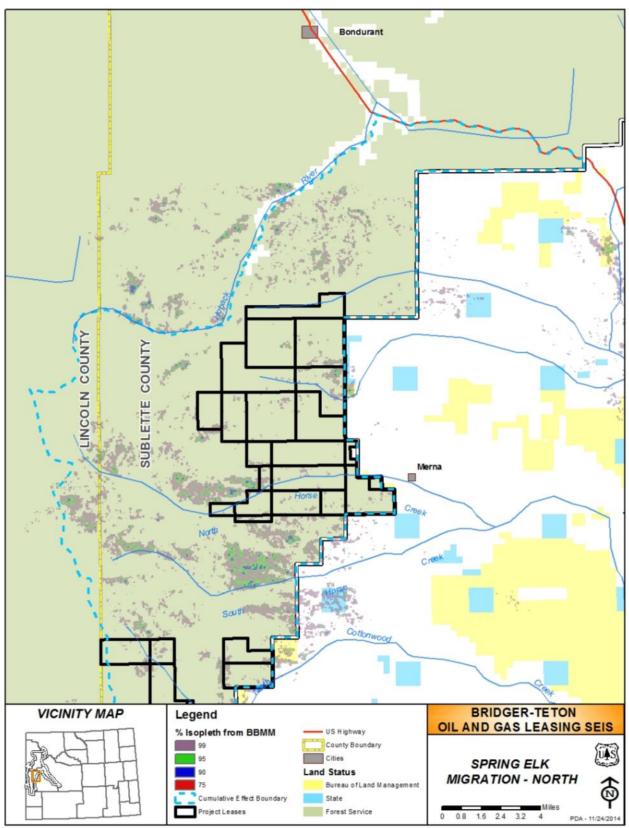
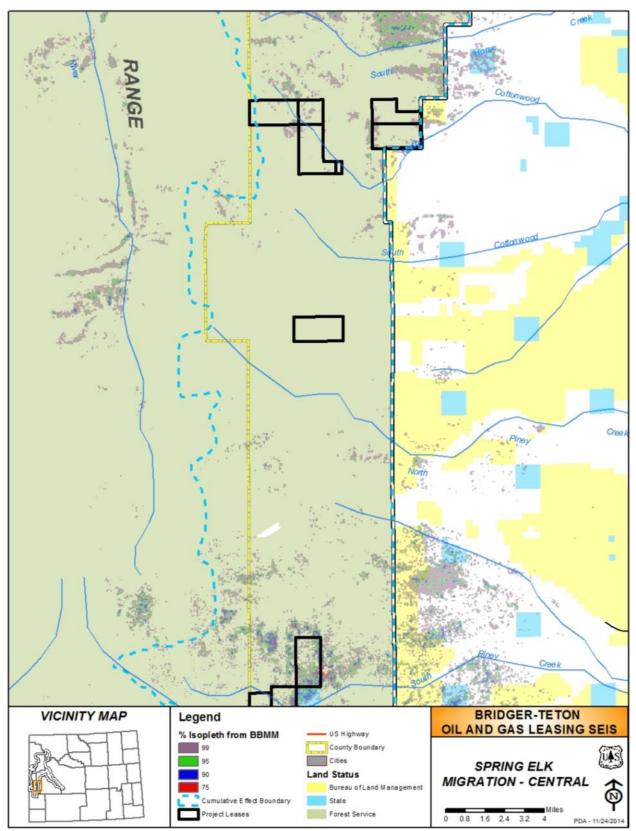


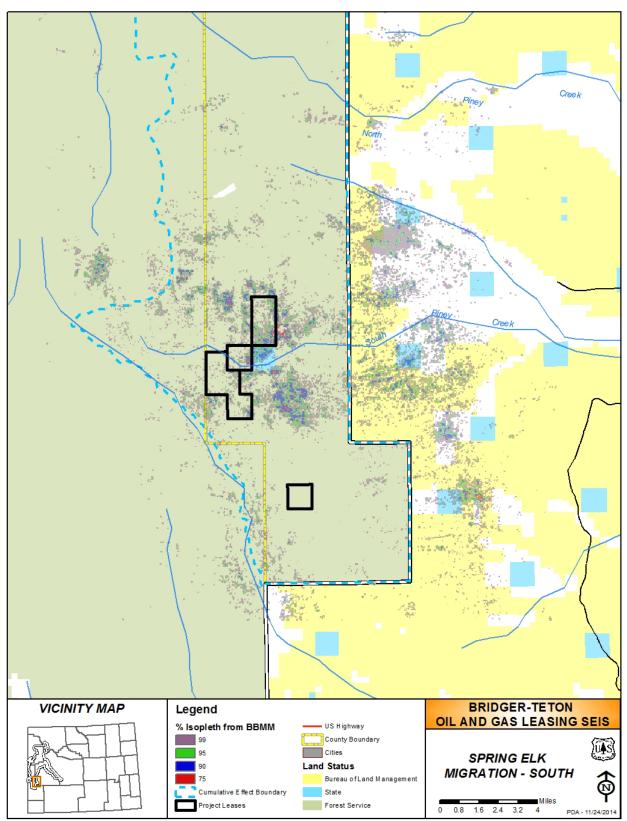
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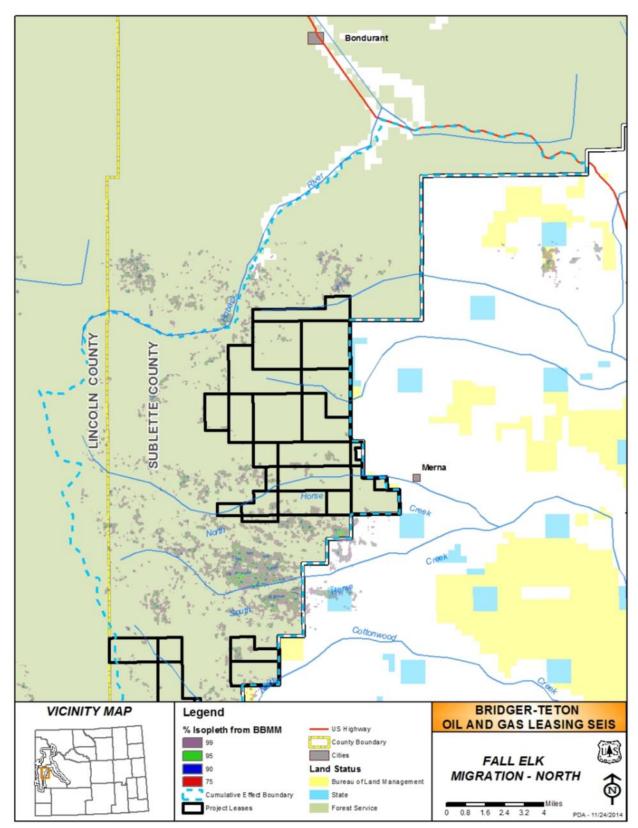
**Figure A-26. Spring elk migration, north map** BBMM = Brownian Bridge Movement Models



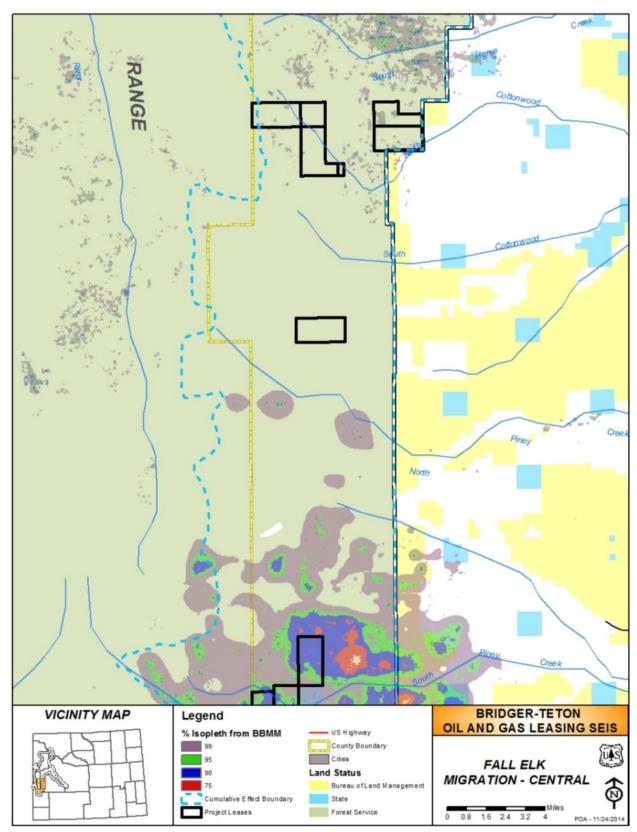
**Figure A-27. Spring elk migration, central map**BBMM = Brownian Bridge Movement Models



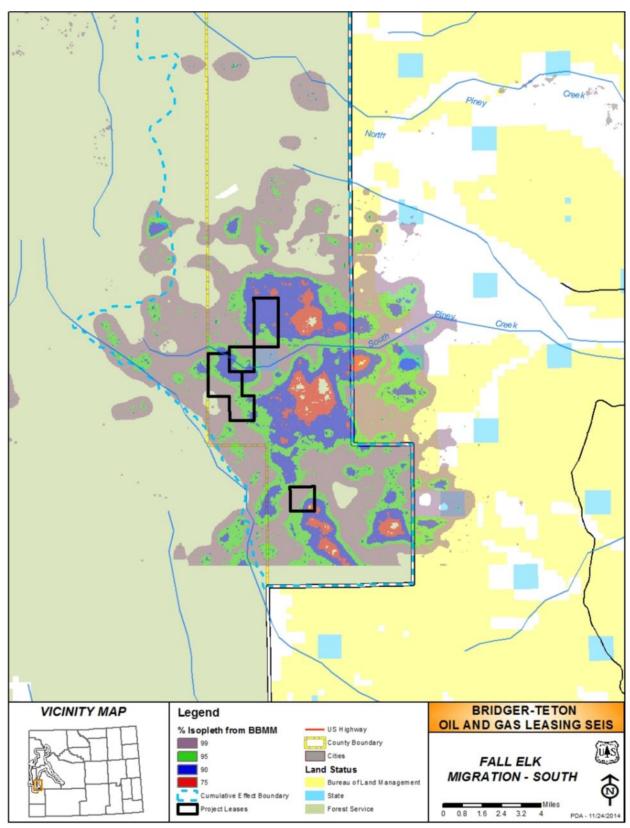
**Figure A-28. Spring elk migration, south map** BBMM = Brownian Bridge Movement Models



**Figure A-29. Fall elk migration, north map** BBMM = Brownian Bridge Movement Models



**Figure A-30. Fall elk migration, central map** BBMM = Brownian Bridge Movement Models



**Figure A-31. Fall elk migration, south map** BBMM = Brownian Bridge Movement Models

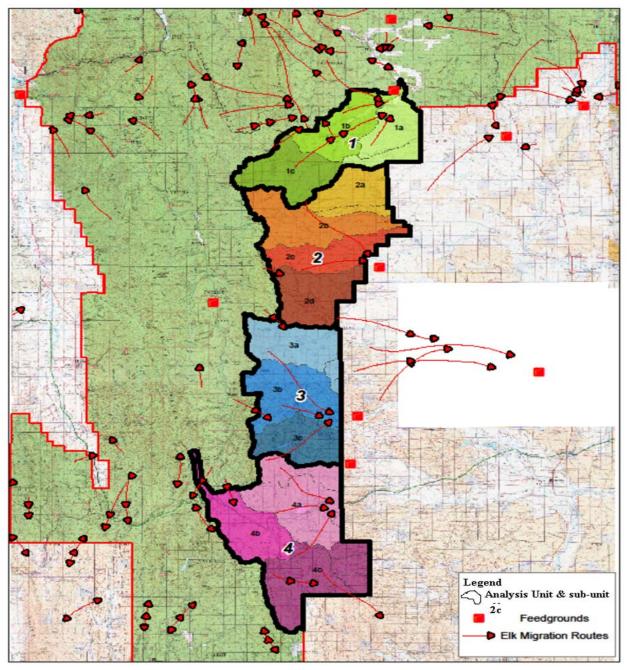


Figure A-32. Elk habitat analysis units and subunits for the Wyoming Oil and Gas project areas

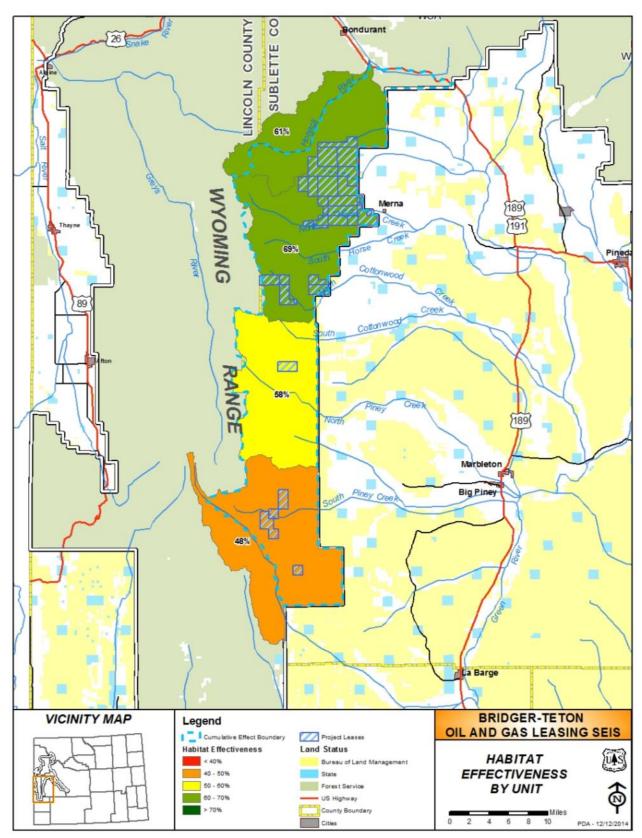


Figure A-33. Elk habitat effectiveness in habitat analysis units considering only open system roads

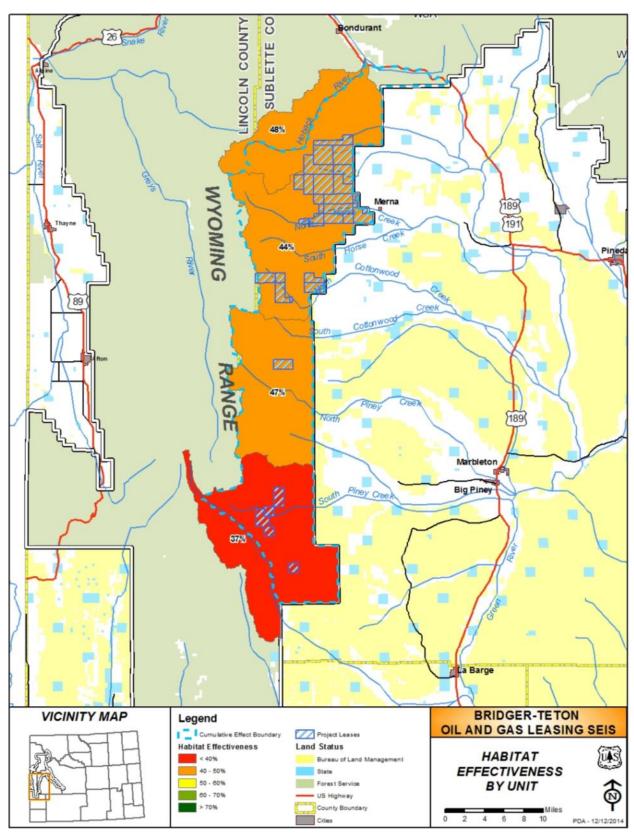


Figure A-34. Elk habitat effectiveness in habitat analysis units considering all roads

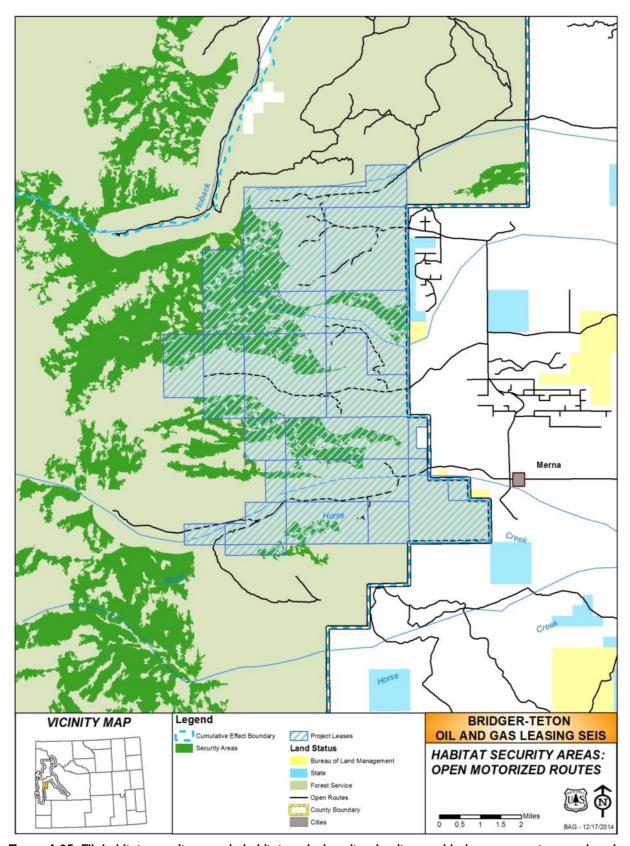


Figure A-35. Elk habitat security areas in habitat analysis unit subunits considering open system roads only in the assessment, north map

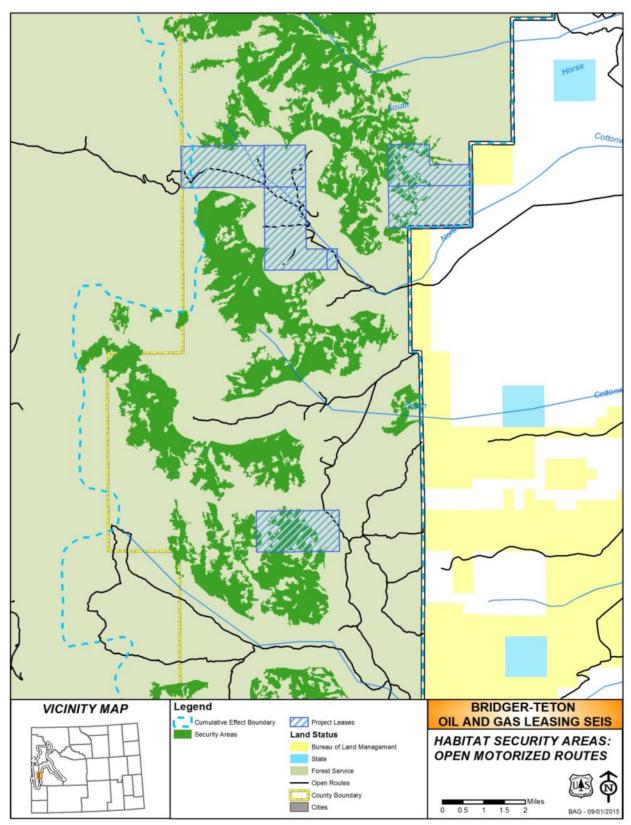


Figure A-36. Elk habitat security area in the habitat analysis unit subunits when considering only open system roads in the assessment, central map

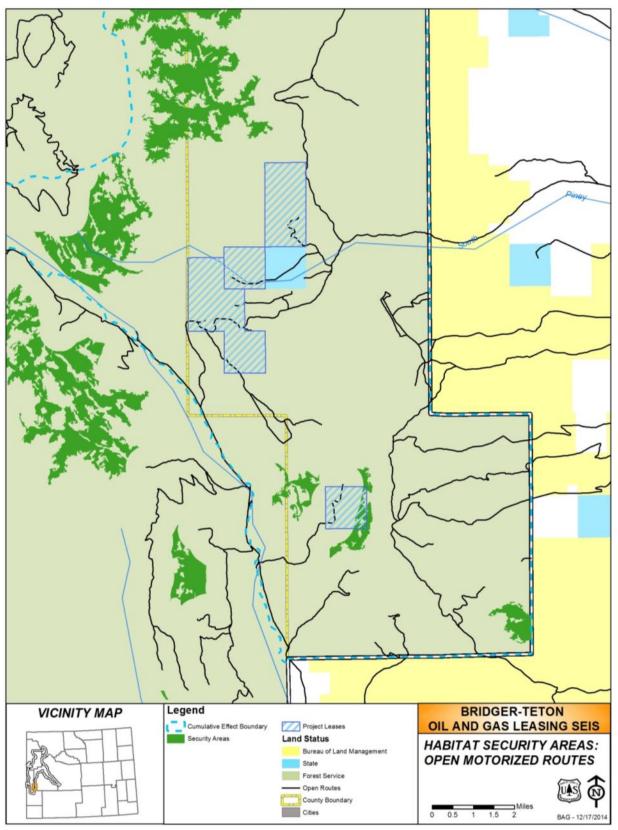


Figure A-37. Elk habitat security areas in the habitat analysis unit subunits when considering only open system roads in the assessment, south map

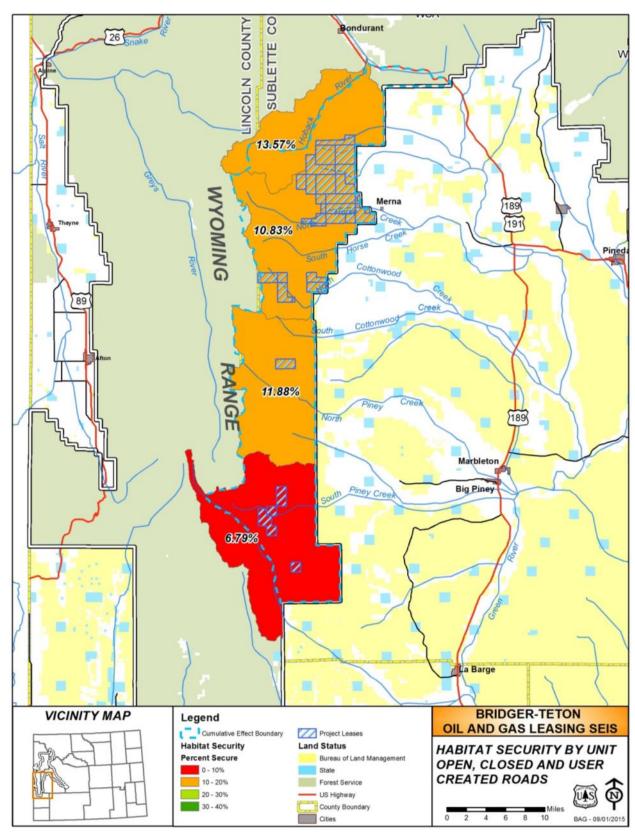


Figure A-38. Elk habitat security values by habitat analysis unit considering all roads in the assessment

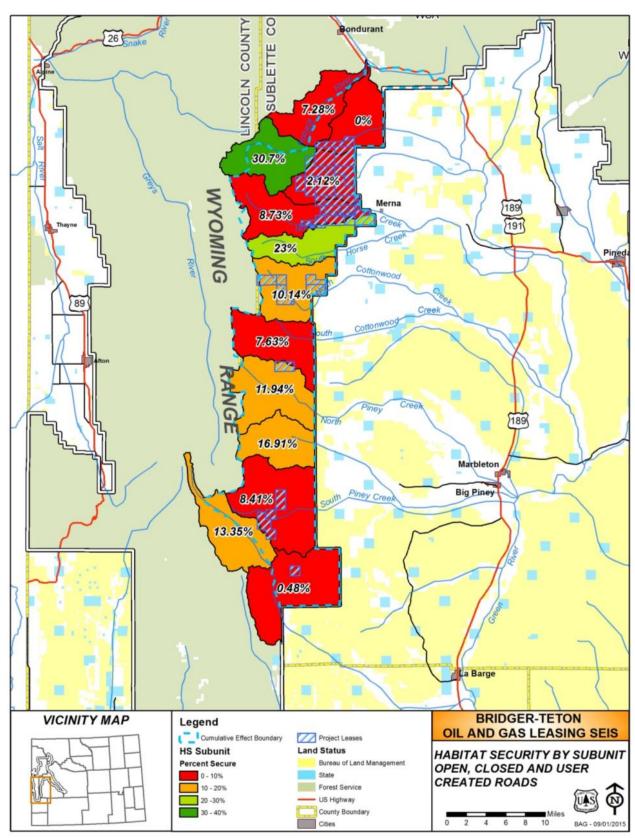


Figure A-39. Elk habitat security values by subunit considering all roads in the assessment

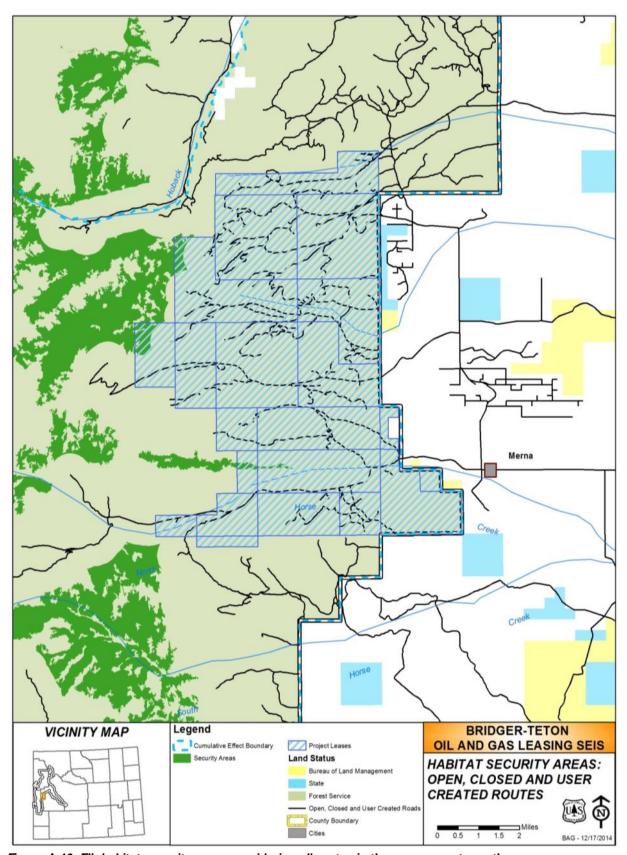


Figure A-40. Elk habitat security areas considering all routes in the assessment – northern map

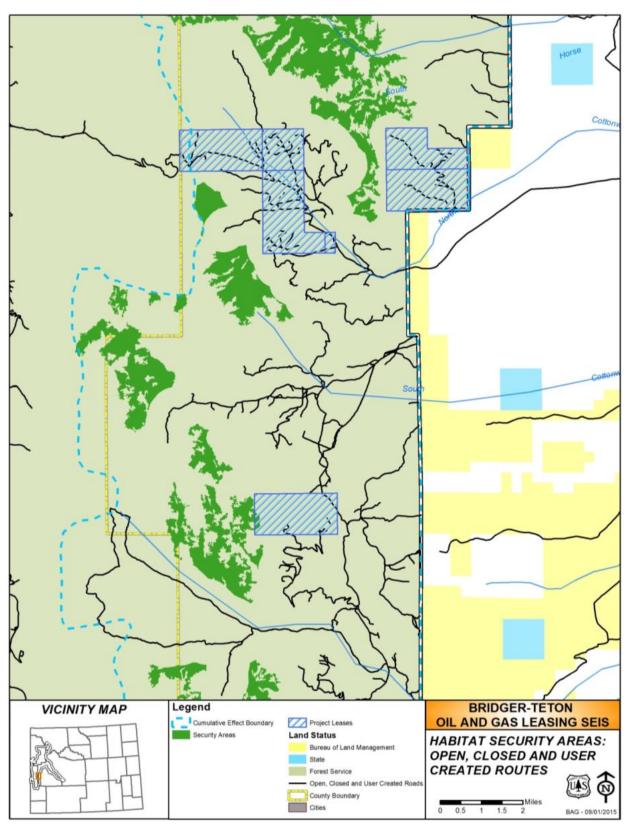


Figure A-41. Elk habitat security areas considering all routes in the assessment - central map

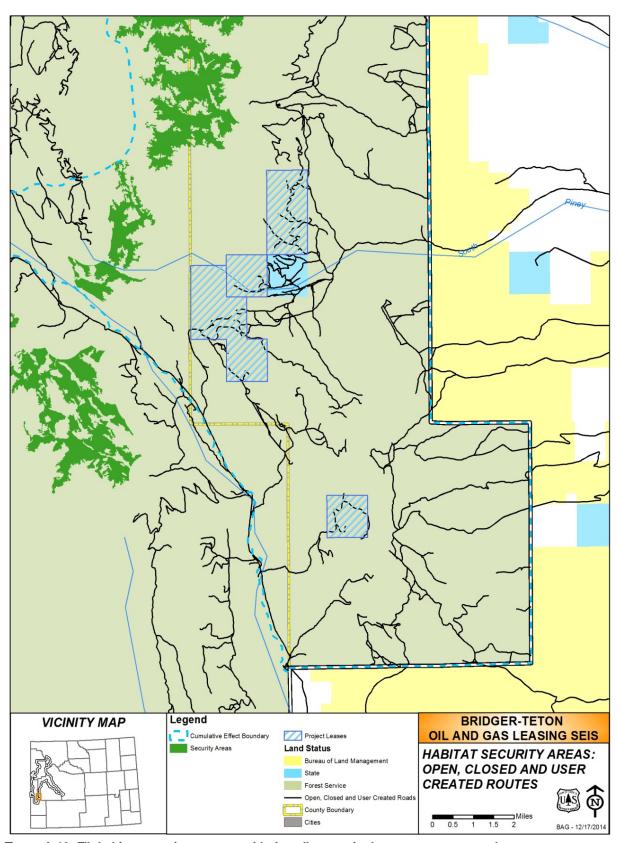


Figure A-42. Elk habitat security areas considering all routes in the assessment – southern map

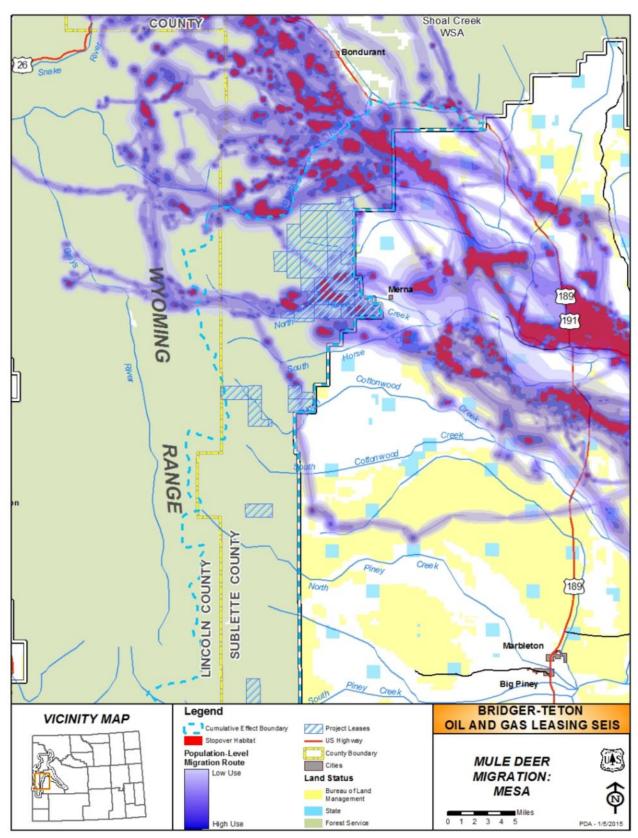


Figure A-43. Mesa mule deer migration routes and stopover areas

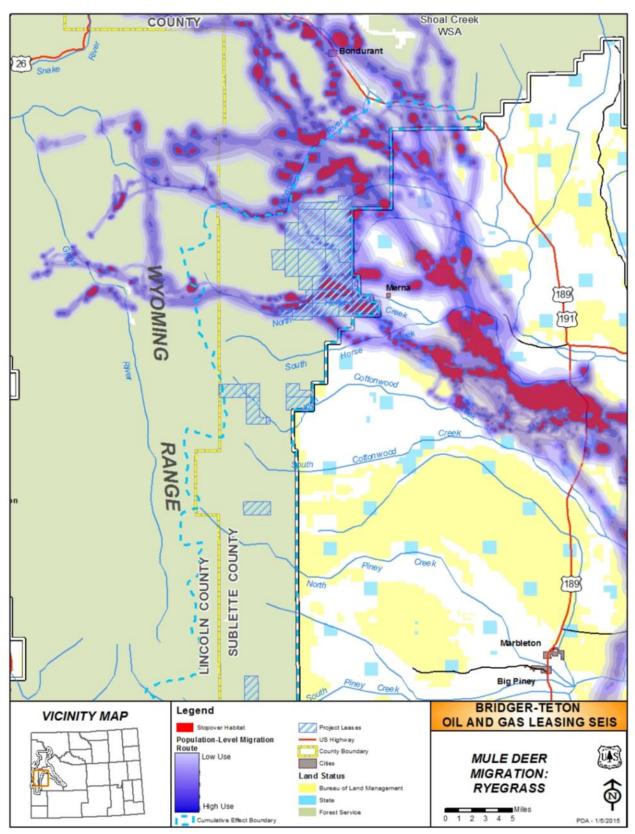


Figure A-44. Ryegrass mule deer migration routes and stopover areas

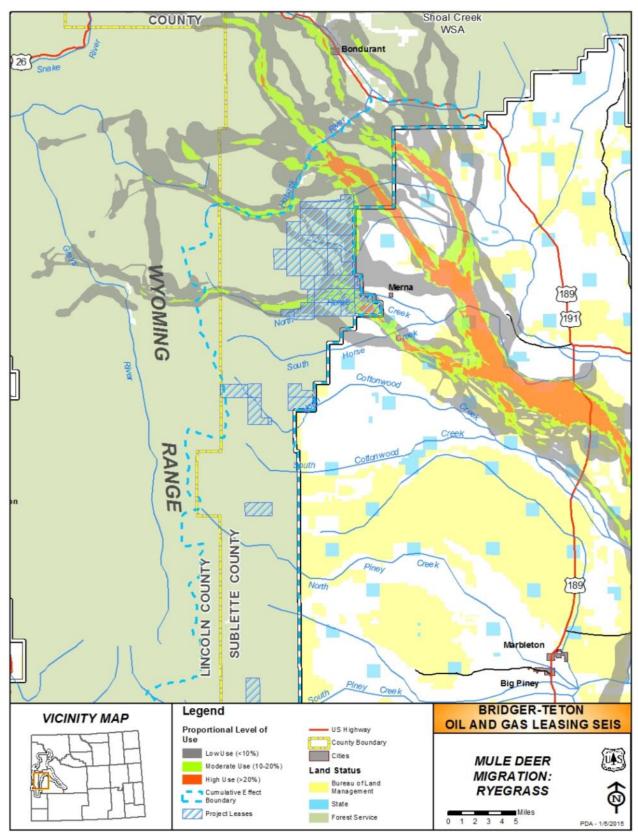


Figure A-45. Proportional level of use of migration routes by the Ryegrass mule deer population

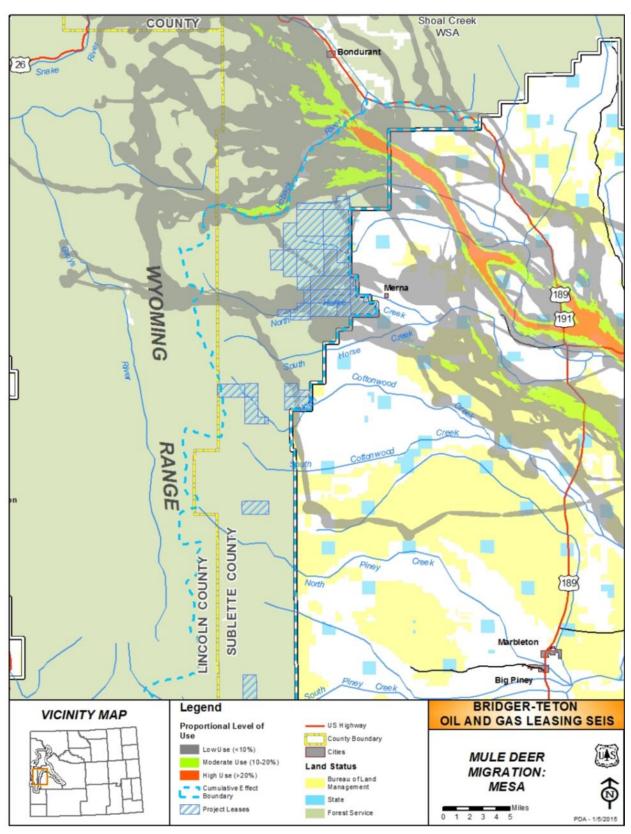


Figure A-46. Proportional level of use of migration routes by the Mesa mule deer population

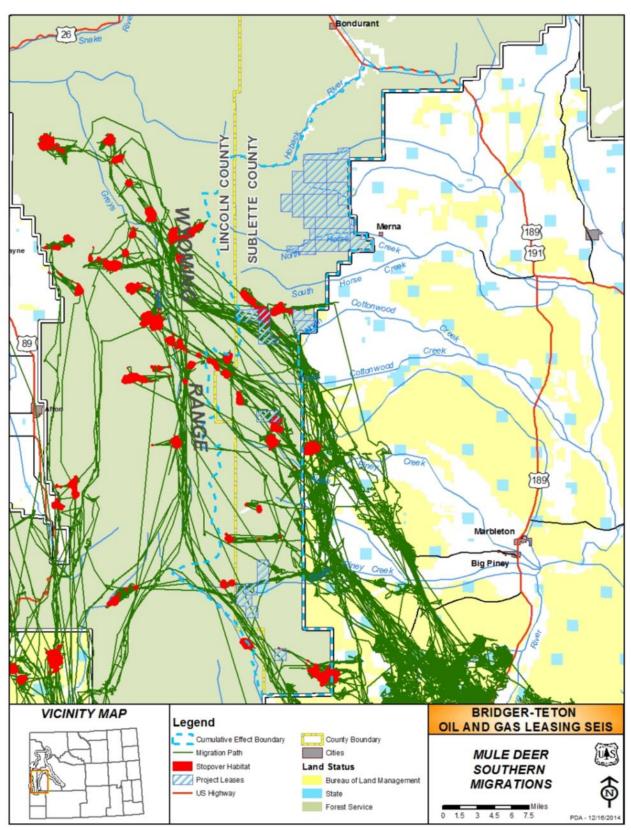


Figure A-47. Mule deer migration routes and summer ranges of the Calpet Road deer herd

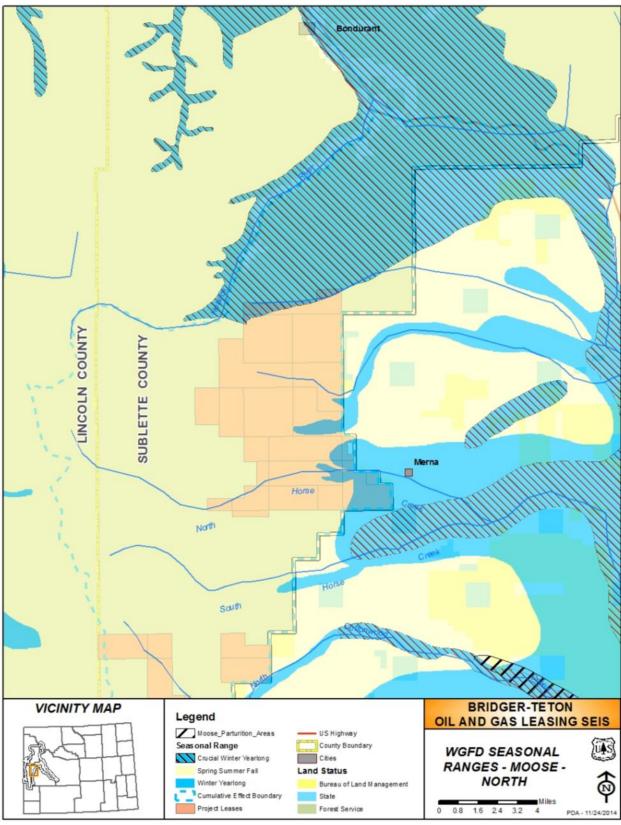


Figure A-48. Moose seasonal ranges relative to lease parcels in the northern and middle lease blocks (WGFD 2014)

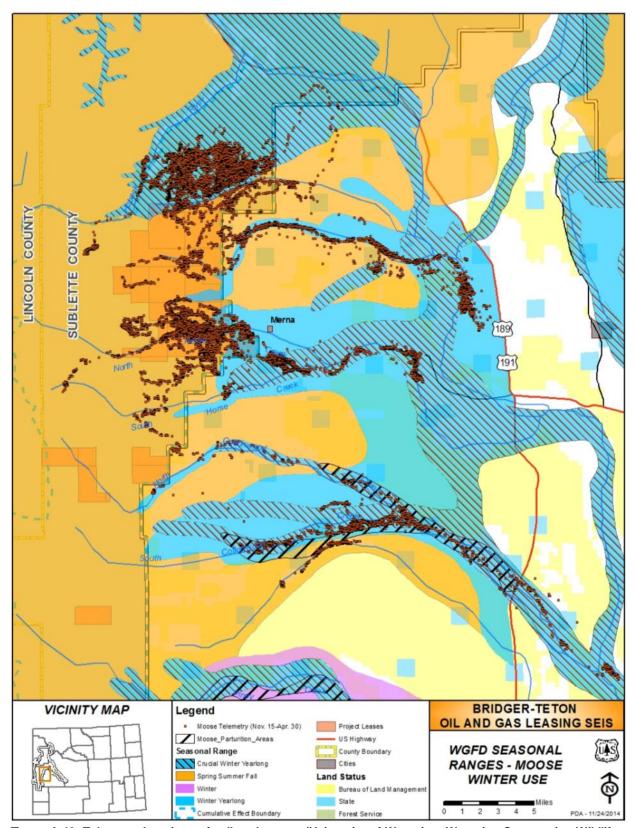


Figure A-49. Telemetry locations of collared moose (University of Wyoming, Wyoming Cooperative Wildlife Research Unit, 2014) during the winter season (November 15 through April 30) relative to crucial winter range and winter/yearlong range as mapped by the WFGD

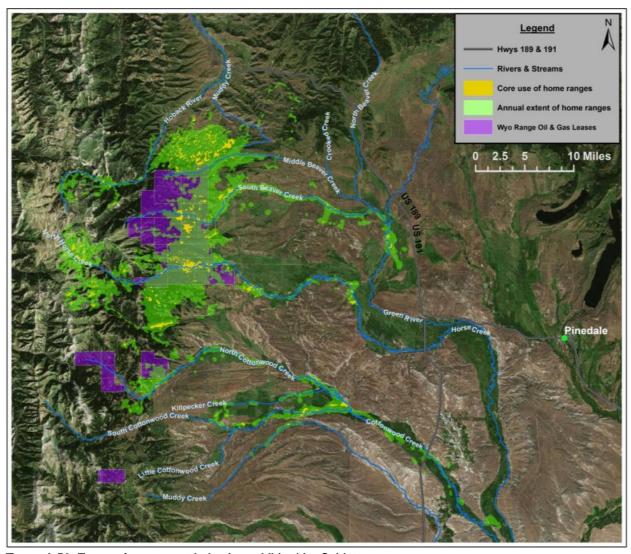


Figure A-50. Types of movement behavior exhibited by Sublette moose

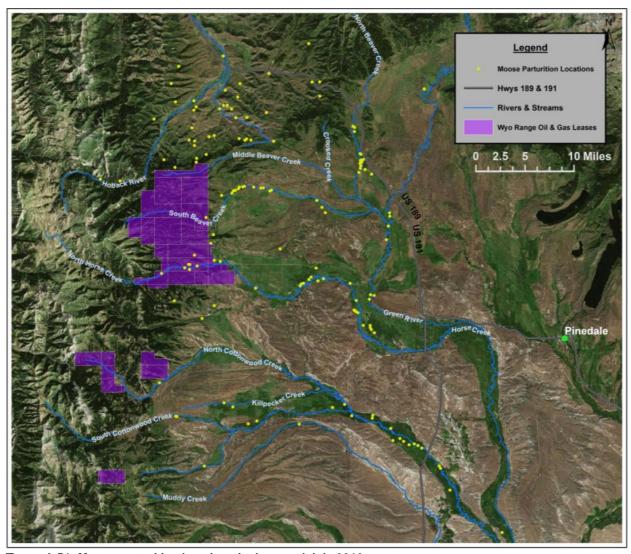


Figure A-51. Moose parturition locations in June and July 2013

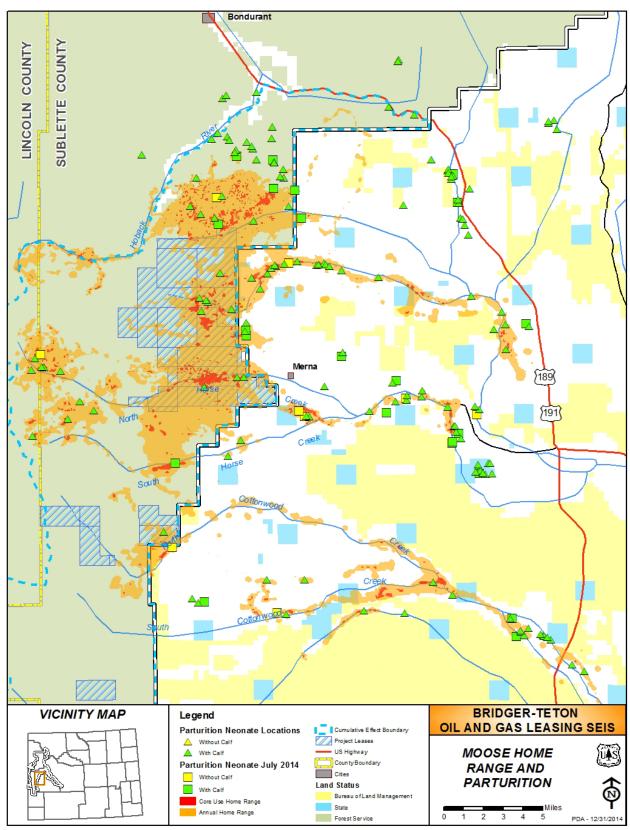


Figure A-52. Moose and neonate locations and parturition during the 4-year study (2011-2014)

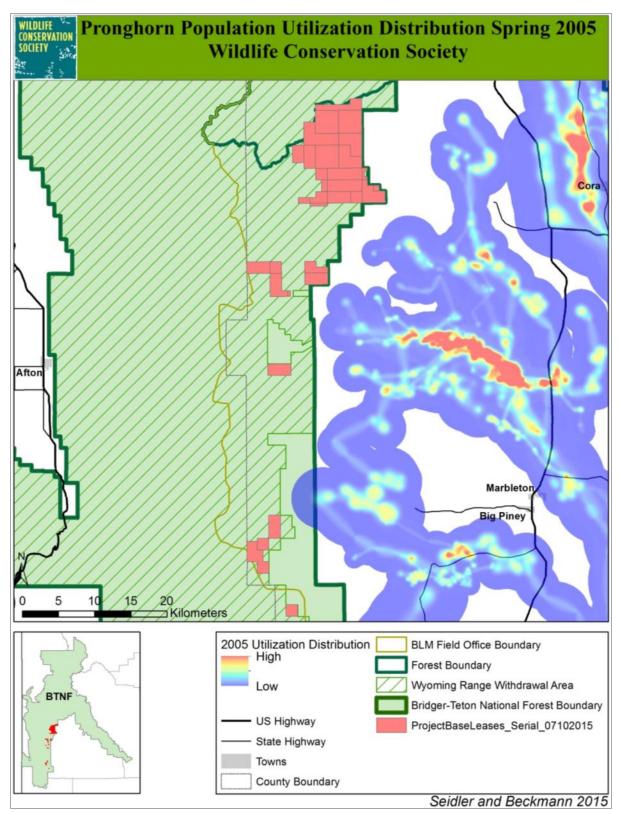


Figure A-53. Pronghorn population utilization distributions during spring migration in 2005

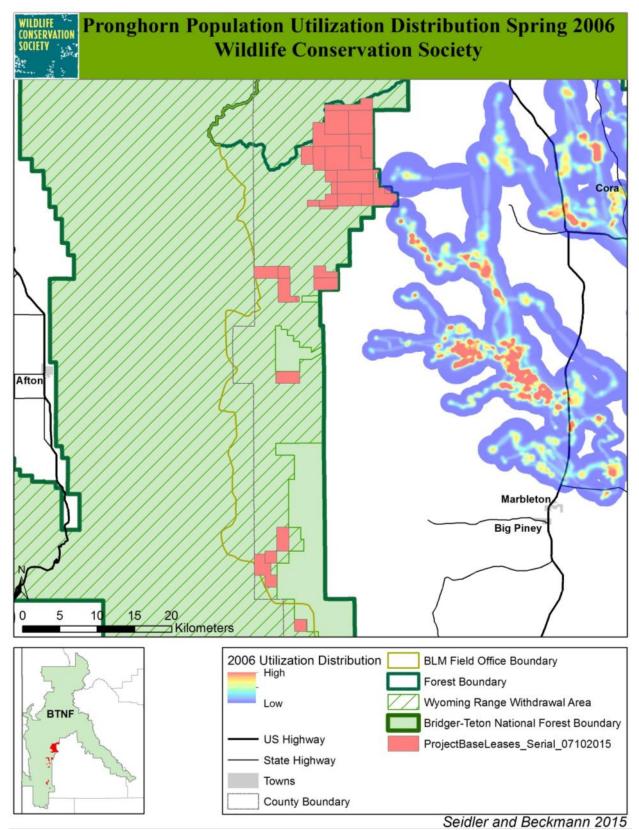


Figure A-54. Pronghorn population utilization distributions during spring migration in 2006

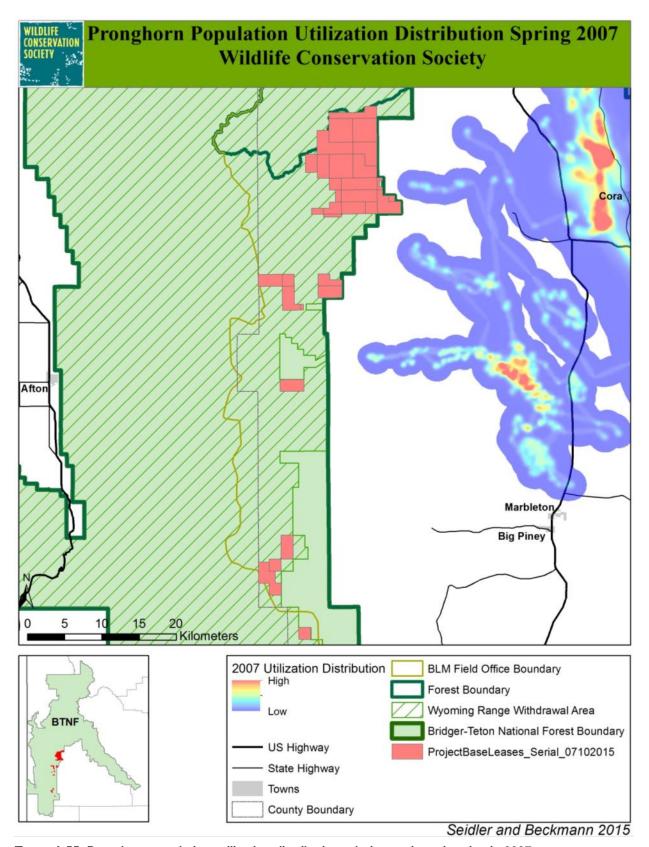


Figure A-55. Pronghorn population utilization distributions during spring migration in 2007

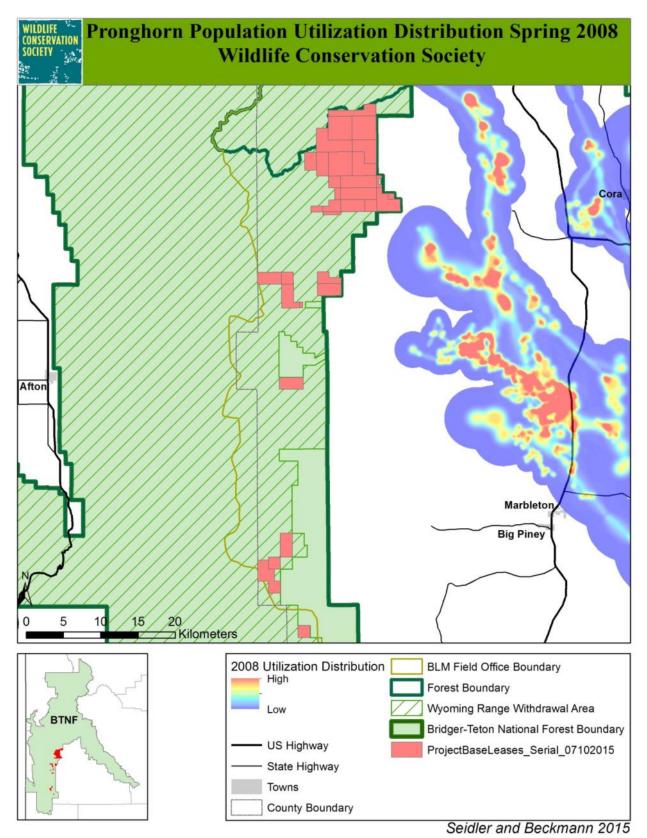


Figure A-56. Pronghorn population utilization distributions during spring migration in 2008

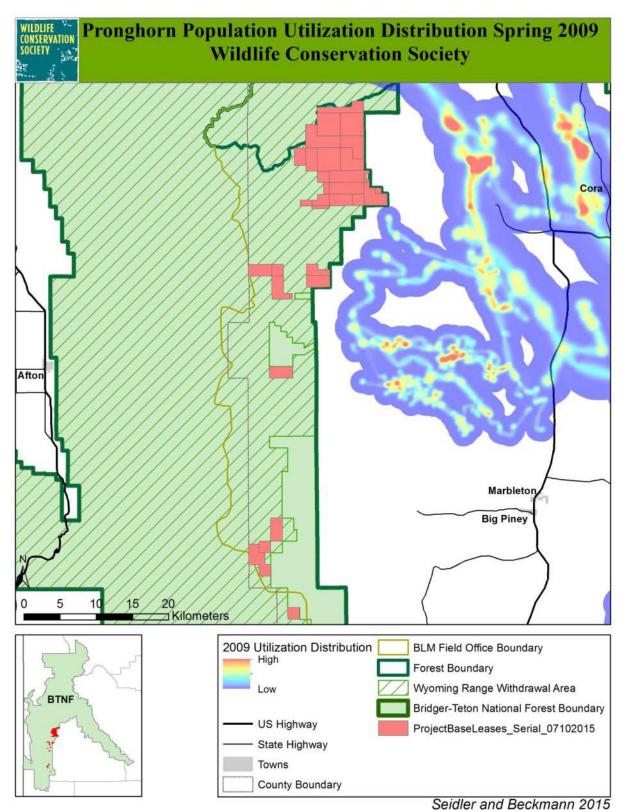


Figure A-57. Pronghorn population utilization distributions during spring migration in 2009

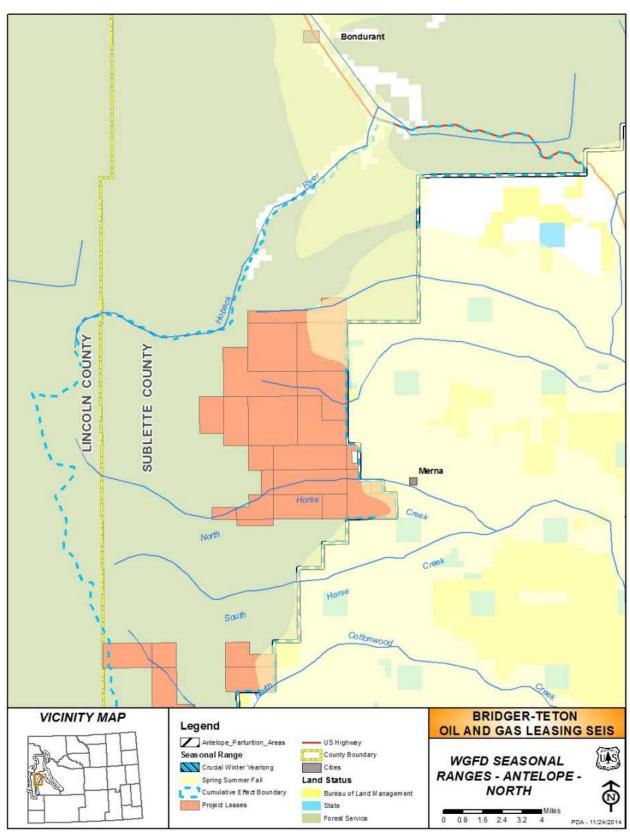


Figure A-58. Antelope seasonal ranges, north map

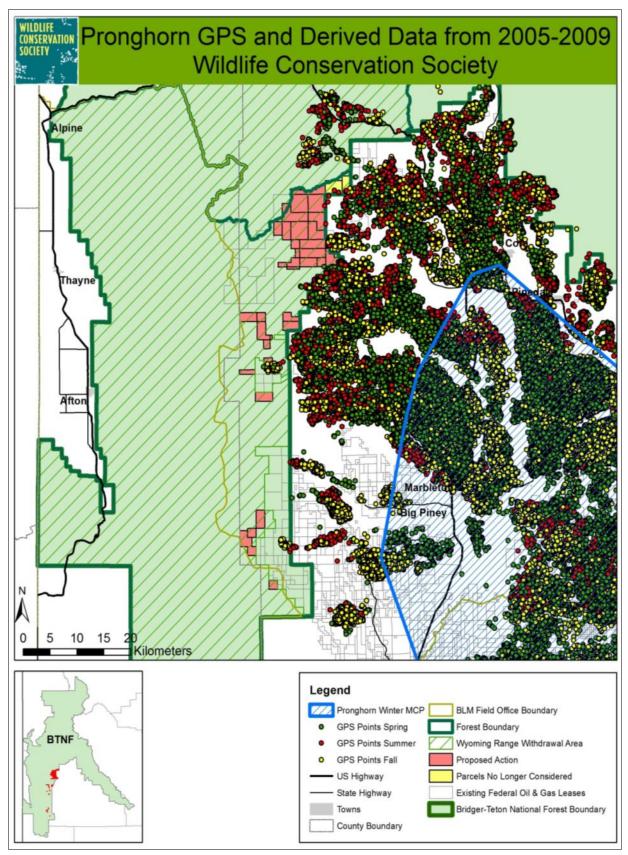


Figure A-59. Seasonal GPS locations on 48 female pronghorn (annually) from 2005 through 2009

### Appendix B: Public Involvement

Scoping and public involvement for this supplemental environmental analysis began in 2008. The Forest Supervisor issued a news release and sent preliminary scoping letters to interested parties on January 28, 2008, notifying them of the proposed action in the analysis area and inviting them to comment. On February 4, 2008, the Forest Supervisor published a notice of intent in the Federal Register (73 FR 6453) with the title, "Notice of Intent To Prepare a Supplemental Environmental Impact Statement to Analyze and Disclose New Information Relative to Oil and Gas Leasing of 44,720 Acres on the Big Piney Ranger District. A revised notice of intent was published in the Federal Register on March 28, 2008 (73 FR 16621) to extend the scoping comment period.

In February 2010, a draft supplemental environmental impact statement was released for public review and comment. In January 2011, a final supplemental environmental impact statement (76 FR 7844) and record of decision were released. In May 2011, the record of decision was withdrawn to allow for further evaluation of several key issues and consideration of new information.

On March 21, 2014, a corrected notice of intent was published in the Federal Register (79 FR 15723) to announce the intent to prepare a supplemental environmental impact statement for this project. This notice of intent updated the original February 4, 2008 notice and the revised notice of intent from March 2008.

Extensive public involvement efforts were conducted with the 2008 scoping period. In addition, public involvement associated with forest plan revision efforts identified public issues and concerns relevant to this project. Because extensive public comments covering the range of relevant issues for the analysis were received in the 2008 scoping period and in the comment period on the 2010 draft supplemental environmental impact statement, an additional scoping period was not conducted. Scoping for a supplemental environmental impact statement is not required (40 CFR 1502.9(c)(4)).

Scoping comments on the 2010 draft supplemental environmental impact statement from the public, other agencies, and tribes were considered by the interdisciplinary team in developing a list of issues to address. Responses to the public concern statements follow.

The purpose of this current analysis is to evaluate new information and to correct deficiencies in previous analyses to ensure the potential effects are fully considered before a final decision is made as to whether leasing is appropriate on lands in the project lease parcels. Comments received on this draft supplemental environmental impact statement will be responded to in the final supplemental environmental impact statement.

### **Summary of Public Concern Statements and How They Are Addressed**

Public Concern 1: The Forest Service should carefully analyze impacts to fish and wildlife.

Effects to fish and wildlife are analyzed in the "Terrestrial Wildlife and "Aquatic Wildlife" sections in chapter 3.

Public Concern 2: The Forest Service should carefully consider and evaluate effects of oil and gas leasing on threatened, endangered, and other sensitive species.

Effects to threatened, endangered, and sensitive species are analyzed in the Aquatic Wildlife," "Terrestrial Wildlife" and "Botanical Resources" sections in chapter 3.

### Public Concern 3: The Forest Service should explicitly analyze visual impacts from the proposed oil and gas leasing.

Effects to scenery were considered and mitigation incorporated to meet forest plan requirements. During future site-specific analysis, when locations of proposed activities are known, a detailed analysis would occur.

# Public Concern 4: The Forest Service should explicitly analyze socio-economic impacts from the proposed oil and gas leasing.

Socio-economic impacts from the proposed oil and gas leasing are discussed in the "Social and Economic Conditions" section of chapter 3. The study area is defined as Sublette County, Wyoming because of the location of the proposed leasing activity and the economic base of that county. It is anticipated that the majority of impacts will occur to that county. Although we recognize that some economic activity may occur outside of Sublette County, including other counties in the analysis increases the risk of diluting the impacts associated with the action alternatives. Therefore, we determined Sublette County is the appropriate study area for the analysis.

#### Public Concern 5: The Forest Service should ensure an appropriate air quality analysis.

Effects to air quality are provided in the "Air Quality" section of chapter 3

#### Public Concern 6: The Forest Service should evaluate effects on water quality and quantity.

Effects to water quality and quantity are discussed in the "Surface Water Resources," and "Ground Water Resources" sections in chapter 3.

### Public Concern 7: The Forest Service should organize a watershed plan before drilling is allowed because of the proposal's potential groundwater effects.

Future proposed drilling activities would be subject to site-specific environmental analysis, and appropriate measures would be identified for resource protection. Potential groundwater effects are disclosed in the "Groundwater Resources" section of chapter 3.

# Public Concern 8: The Forest Service should include appropriate analysis with respect to soils and geology, including erosion and sediment loading potential.

Soil, erosion, and sediment loading potential are discussed in the "Surface Water Resources" section in chapter 3. Geology is discussed in the "Oil and Gas Resources" section. A more thorough analysis would be conducted once site-specific development activities were proposed.

# Public Concern 9: The Forest Service should include analysis of increased OHV activity off designated routes in the SEIS.

Off-highway vehicle activity is discussed in the "Recreation and Related Resources" section.

# Public Concern 10: The Forest Service must analyze impacts to grazing permittees, agricultural producers, land owners, and other citizens in and near the project area.

The "Social and Economic Conditions" section of chapter 3 includes discussions of potential impacts to grazing permittees, and other citizens in and near the project area.

### Public Concern 11: The Forest Service should ensure that all decisions in the SEIS are based on the best available data.

All information and analyses in this document were based on the best data available at the time of analysis.

### Public Concern 12: The Forest Service should analyze the range of potential road impacts and issues.

Impacts from existing and potential road development are described in a variety of resource analysis sections throughout the document.

### Public Concern 13: The Forest Service should prepare an emergency response and fire risk analysis to the SEIS.

Preparing an emergency response and fire risk analysis is outside the scope of this environmental impact statement, because the decision to be made is to determine whether to authorize the BLM to offer leases. No site-specific activities would be approved with this decision; therefore, no emergency response or fire risk analysis is necessary.

### Public Concern 14: The Forest Service should conduct an analysis to appropriately address wetland resources.

The "Surface Water Resources" section in chapter 3 provides an analysis of effects to wetlands. A more thorough analysis would be conducted once site-specific development activities were proposed.

## Public Concern 15: The Forest Service should conduct appropriate and thorough vegetation analyses for the proposed project.

Vegetation analysis was conducted to determine wildlife and botanical habitat information. A more thorough analysis would be conducted once site-specific development activities were proposed.

#### Public Concern 16: The Forest Service should analyze impacts related to noise.

Stipulations are incorporated to protect sensitive wildlife habitat. We don't know where the activities may occur at this stage. Noise would be considered in a site-specific analysis when locations of activities are known.

### Public Concern 17: The Forest Service should analyze the effect of greenhouse gas emissions from potential development.

The "Air Quality" section in chapter 3 provides a general analysis of greenhouse gas emissions. Future proposed development would provide more detailed information to better analyze the potential for greenhouse gas emissions prior to activities occurring.

### Public Concern 18: The Forest Service should analyze earth depletions, shifts in geothermal balance, and potential earthquakes as a result of oil and gas leasing activities.

A discussion on fracking (hydraulic fracturing of oil and gas wells) can be found in the "Oil and Gas Resources" section of chapter 3. This provides an overview of the potential effects of this method on seismic activity, geologic formations, groundwater, and aquifers. Future proposed development would provide more detailed information to better analyze the potential for effects from site-specific activities.

#### Public Concern 19: The Forest Service should analyze approaches that eliminate the leases.

The no action/no leasing alternative provides that analysis. See the chapter 2 description of that alternative and individual resource analysis sections in chapter 3 for analysis of the no action/no leasing alternative.

### Public Concern 20: The Forest Service should expand the scope of the decision to include the Eagle Prospect/Noble Basin proposal.

This comment is outside the scope of this analysis. The leases held by the Plains Exploration and Production Company for the Noble Basin area were sold in 2014 and the proposal was withdrawn. The Eagle Prospect/Noble Basin proposal is no longer considered in the cumulative effects for this analysis.

#### Public Concern 21: The Forest Service should prepare a forestwide oil and gas availability EIS.

The forestwide oil and gas availability analysis occurred with the 1990 forest plan. The forestwide information will be reviewed in the upcoming plan revision efforts. Preparing a forestwide oil and gas availability environmental impact statement is beyond the scope of this analysis.

### Public Concern 22: The Forest Service should prepare regional resource assessments that consider multiple resources.

This analysis pertains to the leasing decision of the particular lease parcels described in chapter 1 of volume 1. Preparing regional resource assessments that consider multiple resources is beyond the scope of this leasing analysis.

#### Public Concern 23: The Forest Service should include a Landscape Scale Assessment.

The preparation of such an analysis and regional resource assessments is outside the scope of this project. This project is focused on the potential environmental effects of authorizing the BLM to offer leases for oil and gas development. This analysis is being conducted to evaluate new information and to correct deficiencies in previous analyses to ensure the potential effects are fully considered before a final decision is made as to whether leasing is appropriate on lands in the project lease parcels.

# Public Concern 24: The Forest Service should analyze cumulative effects of the proposed lease parcels for several resources.

Cumulative effects have been analyzed in every resource section of chapter 3. See appendix E for a detailed list of projects and activities considered in the cumulative effects analyses.

# Public Concern 25: The Forest Service should fully explain the impacts of surface management decisions upon oil and gas opportunities.

The "Oil and Gas Resources" section in chapter 3 thoroughly analyzes the impacts of each alternative on oil and gas development opportunities. A final decision will determine whether the BLM will be authorized to offer leases, and if so, under what constraints.

### Public Concern 26: The Forest Service should seriously examine the potential for increasing risks to human health.

There would be no impacts on human health if a decision is made to authorize the BLM to offer leases for oil and gas development. Once development activities are proposed, further environmental analysis would be conducted and effects to human health could be analyzed if concerns are raised at that time.

## Public Concern 27: The Forest Service should analyze beetle infestation and drought as part of any cumulative impact analysis.

The existing conditions, including beetle infestations, and effects from drought were considered for affected resources including wildlife habitat, botanical resources and aquatic habitat and discussed in chapter 3. Past, present and reasonably foreseeable management actions were considered in the cumulative effects analysis, where they were determined to contribute to effects, and presented by resource topic in chapter 3.

#### Public Concern 28: The Forest Service should analyze impacts to riparian areas.

Impacts to riparian areas are analyzed in the "Surface Water Resources" section of chapter 3.

## Public Concern 29: The Forest Service should incorporate mitigation measures in the effects analyses.

Mitigation measures and stipulations have been incorporated into alternatives 2, 3, and 4 to protect a variety of ecological, physical, social and economic resources. See chapter 2.

### Public Concern 30: The Forest Service should identify and analyze actions that may result in water depletions in Colorado River tributaries, resulting in the need for formal consultation.

The "Groundwater Resources" section in chapter 3 provides this analysis. Consultation with the U.S. Fish and Wildlife Service has been ongoing throughout the life of this project.

### Public Concern 31: The Forest Service should consider a wide array of values when deciding on oil and gas development.

This supplemental environmental impact analyzes the potential impacts to a diversity of ecological, physical, social and economic values. The decisionmaker will consider all the analysis, public concerns, and compliance with laws, regulations, and policy before deciding on whether to authorize the BLM to offer leases for oil and gas development.

# Public Concern 32: The Forest Service should not conduct incremental initiatives that are outside and disconnected from the broader planning process and do not link like decisions to one another.

This analysis considered management direction from the Bridger-Teton forest plan, as amended. The forest plan has been amended several times over the years to incorporate new information and management direction; the most recent amendment incorporated management direction for the greater sage-grouse in September 2015. The BLM is a cooperating agency with this analysis and considered information from the November 2008 Record of Decision and Approved Pinedale Resource Management Plan.

### Public Concern33: The Forest Service should make decisions based on local information and conditions.

This analysis is focused on the potential for oil and gas development at the landscape scale of the Wyoming Range. The decisionmaker will consider all the analysis, public concerns, and compliance with laws, regulations, and policy before deciding on whether to authorize the BLM to offer leases for oil and gas development. Site-specific information related to proposed development that may occur as a result of offering leases will be considered in future environmental analyses before any development can occur.

#### Public Concern 34: The Forest Service should manage public lands for multiple use.

As set forth in law, the mission of the Forest Service is to achieve quality land management under the sustainable multiple-use management concept to meet the diverse needs of people.

### Public Concern 35: The Forest Service should make decisions in the proposed plan that allow flexibility to make site-specific decisions.

If the deciding officer selects an alternative that authorizes the BLM to offer leases, future development will be considered and decided on a site-specific basis, requiring further environmental analysis and separate decisions.

# Public Concern 36: The Forest Service should make decisions while considering the issue within a broader geographic context. There is concern that the Forest Service would make an isolated decision without the benefit of considering the issue within a broader geographic context.

The purpose and need for this project, and the decision framework for this leasing analysis are discussed in chapter 1. Chapter 2 discusses the alternatives considered in this analysis, including the no action/no leasing alternative. This analysis considers the issues regarding impacts to the Wyoming Range. Potential effects of the alternatives are disclosed by resource in chapter 3.

#### Public Concern 37: The Forest Service should focus on alternative energy sources.

A focus on alternative energy sources is outside the scope of this analysis. This project is focused on the potential environmental effects of authorizing the BLM to offer leases for oil and gas development. The Forest Service does not plan mineral and energy development, we are required by law to make mineral and energy resources on Federal lands available for development. If there were a request for development of an alternative energy source (such as wind turbines or solar arrays) on National Forest System lands, we would be required to analyze the effects of such actions before making a decision about such activities.

### Public Concern 38: The Forest Service should represent the public will in its decisions regarding oil and gas leasing.

Public comments submitted for this project represent a variety of concerns and interests. Comments were considered and used to identify issues analyzed for this project. A range of alternatives was considered including the following: The no action/no leasing alternative (alternative 1) presents an alternative that would not authorize leasing of the project parcels; the proposed action (alternative 2) presents an alternative that includes stipulations to meet Forest Plan direction; alternative 3 includes additional resource protection stipulations; and alternative 4 presents an alternative where all parcels would have a no-surface-occupancy stipulation.

### Public Concern 39: The Forest Service should provide interested parties a complete set of documents which will be the basis for leasing decisions.

All parties interested in receiving the complete set of documents can retrieve them from our Web site at <a href="http://www.fs.usda.gov/project/?project=24734">http://www.fs.usda.gov/project/?project=24734</a>, can find them at local Forest Service offices, local public libraries, or can receive paper copies upon request.

#### Public Concern 40: The Forest Service should consider all interest groups in the planning process.

A variety of interest groups have been involved in or have commented on this project over the years that we have been completing this analysis. A list of interest groups, is available upon request.

### Public Concern 41: The Forest Service should keep landowners and affected lease holders informed throughout the process.

Interested and affected parties were identified and have been included in project mailings. The status of this project has been included on the Bridger-Teton National Forest Schedule of Proposed Actions, and public notification will continue to occur through publication of notices in the Federal Register and publication in the Casper Star Tribune, the newspaper of record.

### Public Concern 42: The Forest Service should extend the scoping period and host public meetings in surrounding communities to ensure that the right decision can be made.

The scoping comment period that began in February of 2008 was extended on March 28, 2008. Extensive public involvement efforts were conducted with the 2008 scoping period. In addition, public involvement associated with forest plan revision efforts identified public issues and concerns relevant to this project. Public meetings are planned to occur in surrounding communities during the comment period on the draft supplemental environmental impact statement.

### Public Concern 43: The Forest Service should provide the public with recent, unified information from which to draw sound conclusions.

The purpose of this analysis is to evaluate new information and to correct deficiencies in previous analyses to ensure the potential effects are fully considered before a final decision is made as to whether leasing is appropriate on lands in the project lease parcels.

### Public Concern 44: The Forest Service should clarify the conditions under which validly issued leases can be cancelled.

This analysis was undertaken to address deficiencies in the original analysis identified by the Interior Board of Land Appeals and to address new concerns highlighted by the public involvement process during scoping. As noted under the Decision Framework in chapter 1, the Regional Forester for the Intermountain Region of the Forest Service will decide to modify, or withdraw the previous Forest Service authorization for leasing of the subject lands.

The February 14, 2007 Interior Board of Land Appeals decisions (2006-184 and 2006-208) noted upon remand of the decision back to BLM, that BLM has the full suite of discretion available to it which includes cancelling the leases that were issued.

The Wyoming Range was withdrawn from future mineral leasing via the Omnibus Public Lands Act of 2009. The Act recognized valid existing rights and allowed for a full spectrum of outcomes with regard to the lease parcels based on the supplemental environmental analysis.

### Public Concern 45: The Forest Service should disclose the relationship between the proposed leasing and the large-acreage of leases in the Wyoming Range which are currently suspended.

See "Leasing and Analysis History of the Project Area" in chapter 1.

#### Public Concern 46: The Forest Service should not accede to the pressures of the energy industry.

The Mineral Leasing Act of 1920 and other laws support making mineral resources on Federal lands available for production and to encourage development of mineral resources to meet national, regional, and local needs. See the sections in chapter 1 entitled "About Oil and Gas Leasing on National Forest Lands" and "Relevant Laws and Regulations."

### Public Concern 47: The Forest Service should restart this process to reach a credible resolution to the leasing issue.

This current analysis effort replaces the 2008 to 2011 analysis.

### Public Concern 48: The Forest Service should have disclosed that Stanley Energy was paying for the EIS.

The current analysis effort is funded by the Forest Service. This comment is not relevant for the current analysis effort.

### Public Concern 49: The Forest Service should pay for the new SEIS rather than Stanley Energy Company.

The current analysis effort is funded by the Forest Service. This comment is not relevant for the current analysis effort.

### Public Concern 50: The Forest Service should preserve the Wyoming Range from proposed oil and gas leasing.

See the purpose and need discussion in chapter 1 of volume 1. The Forest Service will review suitable and available lands for oil and gas leasing during upcoming revision efforts. Preserving the Wyoming Range from proposed oil and gas leasing is outside the scope of this analysis.

#### Public Concern 51: The Forest Service should add stipulations to protect aquatic resources.

Table 6 in volume 1 provides a list of all the stipulations that would be applicable to alternatives 2 and 3, including a stipulation to protect aquatic and hydrologic resources.

#### Public Concern 52: The Forest Service should include no-surface-occupancy stipulations.

Alternative 2 would have no-surface occupancy stipulations on 22,194 acres, alternative 3 would have no-surface-occupancy stipulations on 31,917 acres, and alternative 4 would subject all lease parcels to no surface occupancy. See chapter 2, "Alternatives Considered in Detail."

### Public Concern 53: The Forest Service should design and place oil and gas infrastructure to minimize impacts.

Mitigations and stipulations applicable to alternatives 2, 3, and 4 are incorporated with the intent to protect a variety of resources and to minimize impacts. See chapter 2. Future proposed surface-disturbing activities at the application for permit to drill stage would undergo site-specific environmental analysis and identify appropriate site-specific mitigations and stipulations.

### Public Concern 54: The Forest Service should require evaporation or reserve pits to meet specific design criteria that protect wildlife and migratory birds.

There are a variety of stipulations and mitigation measures designed to protect wildlife and migratory birds. In the mitigation measures for wildlife, it says specifically, "Reserve pits may be covered by screen or netting to avoid injury or mortality to migratory waterfowl." See chapter 2 for details.

### Public Concern 55: The Forest Service should include mitigation and monitoring goals, objectives, and resources to ensure mitigation is successful.

The alternatives include stipulations for leasing. Future proposed surface-disturbing activities at the application for permit to drill stage would undergo site-specific environmental analysis and identify appropriate site-specific mitigations, stipulations, and monitoring to ensure mitigation is effective.

### Public Concern 56: The Forest Service should allow drilling on the eastern flank of the Wyoming Range.

The lease parcels under consideration for authorization are located on the eastern slope of the Wyoming Range in the western portion of Sublette County.

### Public Concern 57: The Forest Service should not bring any more leases up for sale in the area of the Wyoming Range.

The Forest Service is not considering any new leasing nominations with this analysis. Any future lease nominations in the area of the Wyoming Range would need to comply with the Omnibus Public Land Management Act of March 2009.

#### Public Concern 58: The Forest Service should lease the Wyoming Range for oil and gas exploration.

As described in chapter 1, when there is interest in oil and gas development on National Forest System lands, the Forest Service and the BLM have joint responsibilities. The Forest Service is responsible for identifying and managing the surface use of National Forest System lands that are available for oil and gas leasing. The BLM is responsible for managing the oil and gas resources and leasing the lands they come from. For oil and gas development to occur, the Forest Service must first evaluate the lands being considered for leasing, and then they can authorize the BLM to offer and issue available lands for lease. This supplemental environmental impact statement is analyzing the potential effects of authorizing the BLM to offer leasing in the Wyoming Range.

### Public Concern 59: The Forest Service should not place arbitrary restrictions on development activities.

The Forest Service does not place arbitrary restrictions on oil and gas development. All stipulations and mitigation measures are designed to protect resources from adverse environmental effects as required by many laws and regulations the agency is bound to follow. See the "Regulatory Framework" sections in each resource analysis in chapter 3.

#### Public Concern 60: The Forest Service should not apply seasonal limitations to drilling.

Where seasonal limitations are required, it is often to protect resources vulnerable to disturbance during certain times of the year. Many seasonal restrictions are designed to protect threatened, endangered, sensitive, or special status wildlife species during critical times such as nesting, birthing, or migration. Such seasonal restrictions are often the primary way we can allow activities to occur and comply with laws such as the Endangered Species Act.

### Public Concern 61: The Forest Service should set absolute thresholds for contamination and stop operations that exceed them.

As part of the Safe Drinking Water Act, the EPA regulates injection of fluids into the subsurface through the Underground Injection Control Program. The EPA has delegated the authority for the Underground Injection Control Program to the State of Wyoming through the WDEQ and Wyoming Oil and Gas Conservation Commission.

Potential risk to groundwater resources from accidental spills and leaks during storage and transportation would be minimized through implementation of best management practices and Operators" Spill Prevention Countermeasure and Control procedures. Casing and cementing requirements specified in 43 CFR 3160 and Onshore Order No. 2 as well as project design criteria provide for sound well control and casing design, which would prevent communication among inadequately cased or plugged zones.

#### Public Concern 62: The Forest Service should restrict helicopter traffic in and out of the area.

Restricting helicopter traffic in and out of the area is outside the scope of this analysis. Future proposed activities at the application for permit to drill stage would undergo site-specific environmental analysis and identify appropriate site-specific mitigations and stipulations.

#### Public Concern 63: The Forest Service should support roadless area rules.

The Forest Service is required to follow all rules and policies related to inventoried roadless areas. Analysis of roadless areas can be found in the "Recreation and Related Resources" section of chapter 3.

### Public Concern 64: The Forest Service should ensure compliance with Mineral Leasing Act requirements as they relate to oil and gas leasing.

This project is in compliance with the Mineral Leasing Act. See the "Oil and Gas Resources" section in chapter 3.

### Public Concern 65: The Forest Service should wait until the new forest plan is completed to guide any oil and gas development.

The forest plan revision is a separate effort addressing all management aspects of the entire forest, and beyond the scope of this leasing analysis.

### Public Concern 66: The Forest Service should manage for lynx habitat in Wyoming, in accordance with Federal laws and requirements.

This analysis takes lynx habitat into consideration and follows all laws and relevant direction including the "Northern Rockies Lynx Management Direction." See the analysis of potential effects to lynx and its habitat in the "Terrestrial Wildlife" section of chapter 3.

### Public Concern 67: The Forest Service should postpone leasing decisions until the Wyoming Range Legacy Act has made its way through legislation.

The Omnibus Public Land Management Act was passed in 2009. Information on the requirements of the Act can be found in chapter 1 in the "Relevant Laws and Regulations" section.

### Public Concern 68: The Forest Service should implement the strategies outlined in Executive Order 13186.

Executive Order 13186 is the Migratory Bird Treaty Act. An analysis of the potential effects to migratory birds can be found in the "Terrestrial Wildlife" section of chapter 3.

#### Public Concern 69: The Forest Service should take measures to avoid and minimize wetland losses.

Stipulations listed in table 6 of chapter 2 provide protection measures for wetlands. The "Surface Water Resources" section in chapter 3 provides an analysis of effects to wetlands. A more thorough analysis would be conducted, and possible other protection measures could be prescribed once site-specific development activities were proposed.

### Public Concern 70: The Forest Service should follow the 1982 planning regulations for managing bighorn sheep populations.

Bighorn sheep populations are managed by the State of Wyoming. Potential effects to bighorn sheep and their habitat are analyzed and discussed in chapter 3.

### Public Concern 71: The Forest Service should ensure compliance with the Wild and Scenic Rivers Act.

This analysis considers the degree of potential effects of post-leasing oil and gas development activities to special areas including wild and scenic river eligible streams, and is compliant with the Wild and Scenic Rivers Act. See the "Recreation and Related Resources" section in chapter 3.

### Public Concern 72: The Forest Service should contact the Wyoming Ecological Services Office regarding guidelines for Bald Eagles because guidelines will be modified.

Updated information regarding bald eagles was considered in this analysis. Potential effects to bald eagles and their habitat are analyzed and discussed in chapter 3.

### **Distribution of the Environmental Impact Statement**

This environmental impact statement has been distributed or made electronically available to over 800 individuals and groups who specifically requested a copy of the document or commented during public involvement opportunities. In addition, copies have been sent (or in some cases made electronically available) to Federal agencies, elected officials, federally recognized tribes, State and local governments, and organizations that have requested to be involved in the development of this analysis. Due to the number of people, agencies, and organizations, a complete listing has been omitted from this EIS, but is available upon request

### Appendix C: Lease Stipulations

A stipulation can be attached to Federal leases that modifies the right to develop Federal lands. The use or occupancy of National Forest System land surfaces for fluid mineral exploration or development can be restricted or prohibited to protect identified resource values.

Waivers, exceptions, or modifications to the stipulation may be granted under specific conditions, which are identified and included in the individual stipulation. A waiver, exception, or modification can only be approved by the Forest Service Responsible Official after an analysis has been completed, consistent with the National Environmental Policy Act, for the site-specific development proposal. A waiver, exception, or modification and any monitoring required as a condition of approval, is subject to the discretion of the Forest Service Authorized Officer, which is the Responsible Official, based on the analysis provided by the resources specialist. When a third-party prepares the environmental analysis, it is still subject to the Forest Service environmental analysis requirements and approval by the Forest Service Responsible Official.

Alternatives 2 and 3 described in chapter 2 of volume 1 apply different stipulations for specific resource protection. Stipulations were developed considering information relevant to the project lease parcels, and also clarify direction from the forest plan, as amended. Table 6 in chapter 2, volume 1 provides a summary of the stipulations applied to alternatives 2 and 3.

Under alternative 4, the no-surface-occupancy stipulation would be applied to all acres of the project lease parcels, and forest plan requirements would apply to activities proposed on other National Forest System lands.

### **No-Surface-Occupancy Stipulation**

A stipulation that can be attached to federal leases that modifies the right to develop federal lands. No-surface-occupancy stipulations are considered a major constraint as they do not allow for surface use or occupancy. For example, a lessee of a no-surface-occupancy stipulation area must develop any surface infrastructure outside the no-surface-occupancy area and would need to use advanced technology, such as directional drilling, to access the oil and gas resource under the no-surface-occupancy area.

**Explanation:** These no-surface-occupancy stipulations are applied to the standard lease form as conditions of the lease. A no-surface-occupancy stipulation is appropriate when the standard terms and conditions, other less restrictive lease stipulations, and best management practices for permit approval are determined to be insufficient to achieve the resource protection objectives.

No-surface-use stipulations would be attached to leases by the BLM as identified by the Forest Service in conformance with the current forest plan during the review process for proposed new leases on National Forest System Lands.

### **Controlled-Surface-Use Stipulation**

A stipulation that can be attached to federal leases that modifies the right to develop federal lands for oil and gas development. For a controlled-surface-use stipulation, use and occupancy is allowed (unless restricted by another stipulation), but identified resource values require special operational constraints that may modify the lease rights. A controlled-surface-use stipulation allows the surface management agency to require a proposed facility or activity be relocated by more than 200 meters from the proposed location if necessary to achieve the desired level of protection.

**Explanation:** Where standard lease terms and permit-level decisions are deemed insufficient to protect sensitive resources, but where a no-surface-occupancy stipulation is deemed overly restrictive, the Forest Service would apply controlled-surface-use stipulations to leases.

A controlled-surface-use stipulation allows the Forest Service to require any future activity or development be modified or relocated from the proposed location if necessary to achieve resource protection. The project applicant will be required to submit a plan to meet the resource management objectives through special design, construction, operation, mitigation, or reclamation measures, and relocation. Unless the plan is approved, no surface occupancy would be allowed on the lease.

Controlled-surface-use stipulations would be attached to leases by the BLM as identified by the Forest Service in conformance with the current forest plan during the review process for proposed new leases on National Forest System lands.

### **Timing-Limitation Stipulation**

A stipulation that can be attached to Federal leases that modifies the right to develop Federal lands. It is applied annually limiting activity for a specified period lasting more than 60 days. It does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Explanation**: Where standard lease terms and permit-level decisions are deemed insufficient to protect sensitive resources but where a no-surface-occupancy stipulation is deemed overly restrictive, the Forest Service would apply timing-limitation stipulations to leases.

In general, timing-limitation stipulations are used to protect resources that are sensitive to disturbance during certain periods. Such stipulations are generally applicable to specific areas, seasons, and resources. They are commonly applied to wildlife activities and habitat, such as winter range for deer, elk, and moose; nesting habitat for raptors and migratory birds; and breeding areas.

Buffer zones are also used to further mitigate impacts from any human activities. The size of buffers can also be specific to species and location and can change based on findings of science or movement of species.

Timing-limitation stipulations would be attached to leases by the BLM as identified by the Forest Service in conformance with the current forest plan during the review process for proposed new leases on National Forest System lands.

### **Exception**

An exception is a one-time exemption from a stipulation can be applied that is determined on a case-by-case basis. The exception suspends the restrictions of a stipulation for a specified period of time, activity, or portion of the area where applied but remains in effect relative to other periods of time, activities, or areas where applied.

**Explanation**: An exception is a limited type of waiver. An exception may not be approved unless, (1) the Authorized Officer determines that the factors leading to the stipulation's inclusion in the

lease have changed sufficiently to make the protection provided by the stipulation no longer justified or (2) the proposed operations would not cause unacceptable impacts.<sup>1</sup>

An exception may be approved if the record shows that circumstances or relative resource values have changed or that the lessee can demonstrate that operations can be conducted without causing unacceptable impacts and that less restrictive requirements would meet resource management objectives. Granting of an exception is a discretionary action that the operator should not routinely expect.

#### Modification

A modification is a temporary or permanent change to a stipulation for the term of the lease, such as a change in the areas, activities, or periods of time where applied, but it does not eliminate the stipulation.

**Explanation**: A modification may not be approved unless (1) the Authorized Officer determines that the factors leading to the stipulation's inclusion in the lease have changed sufficiently to make the protection provided by the stipulation no longer justified; or (2) the proposed operations would not cause unacceptable impacts.<sup>1</sup>

A modification may be approved if the record shows that circumstances or relative resource values have changed or that the lessee can demonstrate that operations can be conducted without causing unacceptable impacts and that less restrictive requirements would meet resource management objectives.

#### Waiver

A waiver permanently eliminates the restrictions of a stipulation, including all areas, activities, or periods of time to which applied.

**Explanation**: A waiver, may not be approved unless, (1) the Authorized Officer determines that the factors leading to the stipulation's inclusion in the lease have changed sufficiently to make the protection provided by the stipulation no longer justified or (2) the proposed operations would not cause unacceptable impacts.<sup>1</sup>

A waiver may be approved if the record shows that circumstances or relative resource values have changed or that the lessee can demonstrate that operations can be conducted without causing unacceptable impacts and that less restrictive requirements would meet resource management objectives.

### **Draft Stipulations**

The stipulation summary table from chapter 2 is repeated here for your reference. Following the table are the draft notices and stipulations designed to protect a variety of national forest resources for this project.

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<sup>&</sup>lt;sup>1</sup> 43 CFR 3101.1-4

Table 1. Stipulations applicable to alternatives 2 and  $3^2$ 

Resource	Resource Needing Stipulation	Applicable to Alternative 2?	Applicable to Alternative 3?	Stipulation Type	Protection Applied
Administrative	Administrative sites	Yes	Yes	No surface occupancy	No surface occupancy within DFC 9A administrative sites.
Jackson Hole	Jackson Hole, Wyoming area stipulation	Yes	Yes	No surface occupancy	No wells can be drilled within 1,250 feet of any public road on the Teton National Forest (portions of the northern block of parcels) without consent of the Secretary of the Interior.
Soils	Steep slopes and unstable soils	Yes	Yes	No surface occupancy	No surface occupancy or use is allowed on slopes in excess of 40 percent or on technically unsuitable soils. (This includes areas prone to mass soil movement.)
Aquatic/ Hydrology	Riparian habitat - fisheries, wildlife, hydrology	No	Yes	No surface occupancy	No surface occupancy within 500 feet of outermost perimeter of riparian habitat.
Recreation	Recreation experience along Wyoming Range Crest	Yes	Yes	No surface occupancy	No surface occupancy within ½-mile of the crest of the Wyoming Range to maintain quality recreation experiences.
Recreation	Lander Cutoff of California National Historic Trail	Yes	Yes	No surface occupancy	No surface occupancy within ¼ mile or to the visual horizon, whichever is less, for sections of the Lander Cutoff where the original ruts still exist.
Recreation	Wild rivers	Yes	Yes	No surface occupancy	No surface occupancy within ¼ mile on either side of a waterbody determined to be eligible for inclusion in the National Rivers System as a wild river.
Recreation	Inventoried roadless areas	No	Yes	No surface occupancy	No surface occupancy within inventoried roadless areas for the purpose of preserving roadless area characteristics and values.
Wildlife	DFC 12 wildlife mitigation	Yes	Yes	Controlled surface use	Controlled surface use applied within DFC 12 to minimize road building and other disturbance for protection of wildlife resources.
Amphibians (R4 Sensitive Species)	Amphibian breeding habitat	No	Yes	No surface occupancy	No surface occupancy within 1,640 feet of known breeding habitat.
Big Game	Moderate to high use migration corridors and stopover areas	No	Yes	Timing limitation	No surface use within 0.3 mile of big game migration corridors and stopover areas during April 1 to June 15; and October 15 to December 1.

<sup>&</sup>lt;sup>2</sup> DFC = forest plan desired future conditions; MA = forest plan management area

Resource	Resource Needing Stipulation	Applicable to Alternative 2?	Applicable to Alternative 3?	Stipulation Type	Protection Applied
Big Game	Crucial winter range	Yes	No	Timing limitation	No human activity or human disturbance in crucial winter ranges for all big game species between November 15 and April 30.
Big Game	Crucial winter range	No	Yes	No surface occupancy	No surface occupancy in crucial winter ranges for all big game species
Big Game	Winter range/yearlong range	No	Yes	Timing limitation	No surface use in big game winter range/yearlong range from November 15 to April 30.
Big Game	Winter range/yearlong range	No	Yes	Controlled surface use	Well pad density restricted to no more than one well pad per section with total oil and gas related disturbance of 32 acres/section or less (5% over 10 square miles).
Big Game	Parturition (birthing) area	No	Yes	Controlled surface use	Well pad density restricted to no more than one well pad per section with total oil and gas related disturbance of 32 acres/section or less (5% over 10 square miles).
Elk	Parturition (calving) area	Yes	Yes	Timing limitation	No surface use in elk calving areas during May 15 to June 30 if elk are present.
Bighorn Sheep	Lambing, rutting, and winter ranges	Yes	Yes	No surface occupancy	No surface occupancy to protect important bighorn sheep habitat.
Bighorn Sheep	Occupied seasonal ranges	No	Yes	Timing limitation	No surface disturbance or use within 1 mile of occupied bighorn sheep seasonal ranges from November 1 to June 30.
Canada Lynx	Identified lynx home range	Yes	Yes	No surface occupancy	No surface occupancy within identified lynx denning home range habitat.
Canada Lynx	All lynx habitat	Yes	Yes	Controlled surface use	Utilize remote monitoring for producing wells to reduce snow compaction due to accessing sites in the winter.
Gray Wolf	Natal den sites	No	Yes	Timing limitation	No surface disturbance within 1 mile of occupied den sites from April 1 to June 15.
Gray Wolf	Rendezvous sites	No	Yes	Timing limitation	No surface disturbance within 1 mile of established rendezvous sites from June 15 to July 31.
Bald Eagle	Active nest Sites	Yes	Yes	Timing limitation	No surface disturbance within 0.5 mile of active nest sites from February 1 to August 15.
Bald Eagle	Winter roost and perch sites	No	Yes	Timing limitation	No surface use from October 1 to April 1 within 0.5 mile of winter roost and perch sites.
Golden Eagle	Active nestsites	No	Yes	Timing limitation	No surface disturbance from January 15 to July 31 within 0.5 mile of active nest sites.

Resource	Resource Needing Stipulation	Applicable to Alternative 2?	Applicable to Alternative 3?	Stipulation Type	Protection Applied
Owl	Active nest sites	No	Yes	Timing limitation	No surface disturbance from February 1 to September 15 within 0.25 mile of active next sites.
Peregrine Falcon	Active nestsites	Yes	Yes	Timing limitation	No surface disturbance from March 15 to August 15 within 0.5 mile of active nest sites.
Raptors	Active nest areas	No	Yes	No surface occupancy	No surface occupancy or use within identified nest areas
Goshawk	Active nest areas	No	Yes	Timing limitation	No surface disturbance from April 1 to August 15 within 0.5 mile of active nest areas.
Raptors (Special Status Species)	Nestsites	No	Yes	Timing limitation	Maintain noise level to 49 decibels or less at nest sites during breeding season from February 1 to August 15.
Sage Grouse	Priority habitat	Yes	Yes	No surface occupancy	In priority habitat management areas and sagebrush focal areas, do not authorize new surface occupancyor surface disturbing activities on or within a 0.6-mile radius of the perimeter of occupied leks that are located in priority habitat management and sagebrush focal areas.  GRSG-TDDD-ST-012 <sup>3</sup>
Sage Grouse	General habitat	Yes	Yes	No surface occupancy	In general habitat management areas, do not authorize new surface occupancy or surface-disturbing activities on or within a 0.25-mile radius of the perimeter of occupied leks. GRSG-TDDD-ST-013
Sage Grouse	General and priority habitat	Yes	Yes	Timing limitation	Do not authorize new surface disturbing and disruptive activities that create noise at 10 [decibels] above ambient measured at the perimeter of an occupied lek during lekking (from March 1 to May 15) from 6 p.m. to 8 a.m. Do not include noise resulting from human activities that have been authorized and initiated within the past 10 years in the ambient baseline measurement GRSG-TDDD-ST-014

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<sup>&</sup>lt;sup>3</sup> GRSG – management direction from the Greater Sage-Grouse ROD, USDA Forest Service September 2015.

Resource	Resource Needing Stipulation	Applicable to Alternative 2?	Applicable to Alternative 3?	Stipulation Type	Protection Applied
Sage Grouse	Priority-core habitat	Yes	Yes	Timing limitation	In priority-core habitat management areas and sagebrush focal areas, do not authorize new surface-disturbing or disruptive activities from March 15 through June 30.  Where credible data, based upon field analysis, support different timeframes for the seasonal restriction, dates may be shifted by either 14 days before or subsequent to the above dates, but not both. GRSG-TDDD-GL-016
Sage Grouse	General habitat	Yes	Yes	Timing limitation	In general habitat management areas, do not authorize new surface disturbing or disruptive activities from March 15 to June 30 within 2 miles of the lek or lek perimeter of any occupied lek located inside general areas. Where credible data, based upon field analysis, support different timeframes for this restriction, dates may be shifted by either 14 days before or subsequent to the above dates, but not both. GRSG-TDDD-GL-018
Sage Grouse	Priority habitat	Yes	Yes	Controlled surface use	In priority-core habitat management areas and sagebrush focal areas, limit the density of activities related to oil and gas development or mining activities to no more than an average of one pad or mining operation per 640 acres, using the current Density Disturbance Calculation Tool process or its replacement. GRSG-TDDD-GL-021

# NOTICE FOR LANDS OF THE NATIONAL FOREST SYSTEM UNDER JURISDICTION OF DEPARTMENT OF AGRICULTURE

In conducting operations associated with this lease, the lessee/operator must comply with all the rules and regulations of the Secretary of Agriculture set forth at Title 36, Chapter II, of the Code of Federal Regulations governing the use, occupancy, and management of National Forest System (NFS) lands when not inconsistent with existing lease rights granted by the Secretary of Interior.

All matters related to this notice are to be addressed to:

Forest Supervisor Bridger-Teton National Forest PO Box 1888 340 N. Cache Jackson, WY 83001 (307) 739-5500

who is the authorized representative of the Secretary of Agriculture.

**CULTURAL RESOURCES** (National Historic Preservation Act of 1966 (NHPA), P.L. 89-665 as amended by P.L. 94-422, P.L. 94-458, and P.L. 96-515):

The Forest Service authorized officer is responsible for ensuring that the leased lands are examined prior to the undertaking of any ground-disturbing activities to determine whether or not cultural resources are present, and to specify mitigation measures for effects on cultural resources that are found to be present.

The lessee or operator shall contact the Forest Service to determine if a site-specific cultural resource inventory is required prior to undertaking any surface-disturbing activities on Forest Service lands covered by this lease.

The lessee or operator may engage the services of a cultural resource specialist acceptable to the Forest Service to conduct any necessary cultural resource inventory of the area of proposed surface disturbance. In consultation with the Forest Service authorized officer, the lessee or operator may elect to conduct an inventory of a larger area to allow for alternative or additional areas of disturbance that may be needed to accommodate other resource needs or operations.

The lessee or operator shall implement mitigation measures required by the Forest Service to preserve or avoid destruction of cultural resource values. Mitigation may include relocation of proposed facilities, testing, salvage, and recordation or other protective measures.

During the course of actual surface operations on Forest Service lands associated with this lease, the lessee or operator shall immediately bring to the attention of the Forest Service the discovery of any cultural or paleontological resources. The lessee or operator shall leave such discoveries intact until directed to proceed by Forest Service.

**THREATENED OR ENDANGERED SPECIES** (The Endangered Species Act. (ESA), P.L. 93-205 (1973), P.L. 94-359 (1974), P.L. 95-212 (1977), P.L. 95-632 (1978), P.L. 96-159 (1979), P.L. 97-304 (1982), P.L. 100-653 (1988)):

The Forest Service authorized officer is responsible for compliance with the Endangered Species Act. This includes meeting ESA Section 7 consultation requirements with the U.S. Fish and Wildlife Service prior to any surface disturbing activities associated with this lease with potential effects to species and/or habitats protected by the ESA. The results of consultation may indicate a need for modification of or restrictions on proposed surface disturbing activities.

The lessee or operator may choose to conduct the examination at their cost. Results of the examination will be used in any necessary ESA consultation procedures. This examination and any associated reports, including Biological Assessments, must be done by or under the supervision of a qualified resource specialist approved by the Forest Service. Any reports must also be formally approved by the USDA Forest Service biologist or responsible official.

### NOTICE FOR LANDS Administered by the Bridger-Teton National Forest

The National Forest Management Act of 1978 requires all National Forests to be managed in accordance with their respective Land and Resource Management Plans. All leases, permits, and licenses for the use and occupancy of National Forest System lands are required to be consistent with completed Plans. The management standards and guidelines which apply to this lease holding are contained within Chapter 4 (Land Management Direction) of the Land and Resource Management Plan for the Bridger-Teton National Forest. The accompanying Record of Decision document contains some changes and additions to standards contained in Chapter 4. An enclosure to an accompanying letter from the Regional Forester dated February 20, 1990, contains some clarifying information about management standards. Some additions to Chapter 4 and Appendix B of the Land and Resource Management Plan are described in the Decision Notice and Environmental Assessment for Oil and Gas Leasing in Management Area 49, Jackson Ranger District, Bridger-Teton National Forest. Additional site-specific standards apply to this lease holding, and are contained within the Environmental Assessment and Decision Notice for Oil and Gas Leasing in Management Area \_\_\_\_\_\_\_\_, Ranger District, Bridger-Teton National Forest. All of the documents listed above are available for review at the Forest Service office listed at the end of this stipulation.

Standards and guidelines within the Land and Resource Management Plan establish the framework for the design and implementation of any surface disturbing project. Mitigating measures required for a project will be identified through a site-specific environmental analysis and decision which complies with the National Environmental Policy Act.

All matters related to this notice are to be addressed to:

Forest Supervisor Bridger-Teton National Forest PO Box 1888 340 N. Cache Jackson, WY 83001 (307) 739-5500

who is the authorized representative of the Secretary of Agriculture.

(Amended 4/17/92 by Forest Plan Amendment No. 1.)

# LEASE NOTICE Forest Management Plan Guidelines for Lynx

Lands in this lease contain mapped Canada lynx habitat and/or linkage areas. The Lessee is encouraged to contact the local Forest Service Ranger District Office for potential site-specific requirements, such as the Bridger-Teton National Forest, Forest Management Plan Guidelines, for conservation of Canada lynx habitat or linkage areas prior to proposing operations on the lease. The Forest Service will assess any proposed operations to determine effects on Canada lynx, to ensure compliance with Forest Plan regulatory requirements provided by the NRLMD (USFS 2007). Results of this assessment may result in some restrictions on proposed operations, or disallow use and occupancy if they would be in violation of the Forest Plan or Endangered Species Act of 1973.

Compliance with the following guidelines from the Northern Rockies Lynx Management Direction (NRLMD) Forest Plan Amendment (2007) will be assessed:

- Guideline HU G4: For mineral and energy development sites and facilities, remote monitoring should be encouraged to reduce snow compaction.
- Guideline HU G5: For mineral and energy development sites and facilities that are closed, a reclamation plan that restores lynx habitat should be developed.
- Guideline HU G6: Methods to avoid or reduce effects on lynx should be used in lynx habitat when upgrading unpaved roads to maintenance levels 4 or 5, if the result would be increased traffic speeds and volumes, or a foreseeable contribution to increases in human activity or development.
- Guideline HU G7: New permanent roads should not be built on ridge-tops and saddles, or in areas identified as important for lynx habitat connectivity. New permanent roads and trails should be situated away from forested stringers.
- Guideline HU G8: Cutting brush along low-speed, low traffic volume roads should be done to the minimum level necessary to provide for public safety.
- Guideline HU G9: On new roads built for projects, public motorized use should be restricted. Effective closures should be provided in road designs. When the project is over, these roads should be reclaimed or decommissioned, if not needed for other management objectives.
- Guideline HUG12: Winter access for non-recreation special uses and mineral and energy exploration and development, should be limited to designated routes or designated over-the-snow routes.

### NO SURFACE OCCUPANCY STIPULATION Administrative Sites

No surface occupancy or use is allowed on the lands described below (legal subdivision or other description).

Forest Service 9A administrative sites, as identified in the Bridger-Teton National Forest Land and Resource Management Plan.

Portions of parcels WYW172848 and WYW173267,

#### For the purpose of:

Protecting Forest Service investment and use of facilities and the safety of the users.

Exceptions: None.

**Modifications:** The authorized officer may modify the area subject to the stipulation if it is determined that portions of the leasehold do not contain administrative sites.

**Waiver:** The authorized officer may grant a waiver if it is determined that the entire lease area does not contain administrative sites.

#### JACKSON HOLE AREA OIL AND GAS LEASE SPECIAL STIPULATION

The lands embraced in this lease being within the area designated in the memorandum of August 15, 1947, by the Secretary of the Interior ("Oil and Gas Leases in the Jackson Hole, Wyoming Area"; Federal Register, August 30, 1947, page 5859), which specifies the general conditions under which the unitized development of the oil and gas resources is authorized, the lessee hereby agrees:

- (1) To drill only such wells on the leased land as may be authorized by the Secretary of the Interior under an approved unit plan; to drill no well within 1250 feet of any public road on or adjacent to the leased land without the consent of the Secretary of the Interior first had and obtained; to refrain from defacing, injuring, or destroying trees, shrubs, or natural features, or removing same outside of the authorized work limits or pipeline and road rights-of-way as established pursuant to, or revised in accordance with, the unit plan. After designation of the authorized work limits by the Secretary of the Interior or his representatives, lessee shall mark such limits by some acceptable visual means. The location of camps, storage, parking of equipment, and storage of materials shall be confined within the authorized work limits. Sludge or other waste by-products from drilling or operations shall be so confined or disposed of that they do not destroy scenic or wildlife or pollute streams.
- (2) To remove at the termination of drilling operations, all camps and buildings not essential to a continuing operation of any well, and to fill all sump holes, ditches, and other excavations, remove or cover all debris, and to restore the sites to a neat and presentable condition appropriate to the surrounding landscape, and, upon any partial or total relinquishment, cancellation, or expiration of this lease as to that part of the leased land to which his rights have terminated, so far as reasonably possible, to restore the surface of the leased land to its former condition to the extent deemed necessary by the Secretary of the Interior and the Regional Forester, U.S. Forest Service, Ogden, Utah, or their authorized representatives.
- (3) To keep to an absolute minimum the number of access, tote roads, and other travelways necessary to conduct the lessee's operations, the location of which shall be designated by the Supervisor prior to the time of their construction. Access to existing public highways shall be determined by the Supervisor at such points on the highways with due regard for sight distance restrictions, safety, or scenic considerations. The location, alignment and cross section of all roads constructed for the convenience of lessee's operations, shall be such that after discontinuance of use, they can be obliterated and the area over which they traverse can be restored to its original condition. All types of roads constructed for operational uses shall, at the termination of these uses, be obliterated where required and the area over which they traversed restored in such a manner that revegetation will be encouraged. All roads constructed for operational purposes are to be considered as private roads and the erection of signs, locked gates, or other devices that may be required, at the discretion of the Supervisor, to discourage or prevent their use by the public shall be constructed and maintained by the lessee.
- (4) To protect the scenic and aesthetic values of roadsides, waterfronts, and recreation area zones as far as possible consistent with the authorized use in connection with construction, operation, and maintenance facilities.
- (5) To conduct operations in a manner that will offer the least possible disturbance to wildlife on or adjacent to the leased land; to exercise no methods of control or interference with such wildlife without authority first obtained from the authorized representative of the Secretary of the Interior

- and/or the State Game and Fish Commission; to make no claim against the federal government or the State on account of damage by such wildlife to improvements placed on the leased land.
- (6) To observe and comply with all State and Federal laws and regulations relating to wildlife and to take such action as is necessary to assure observation and compliance with these laws and regulations by lessee's employees and agents.
  - As to any land within the Cache Creek Municipal Watershed, the lease will contain the following additional requirement.
- (7) To comply with plans heretofore made through agreement with the Forest Service and the Town Council of Jackson, Wyoming, for the protection from pollution of the municipal water during the term of this lease or any extension thereof.

#### On the lands described below (legal subdivision or other description).

This applies to the areas of parcels WYW172850, WYW172851, WYW173274 that overlap management area 23, along the north and northwest boundaries of the northern block of project lease parcels.

**Exceptions:** 

Modifications:.

Waiver:

# NO SURFACE OCCUPANCY STIPULATION Steep Slopes and Unstable Soils

No surface occupancy or use is allowed on the lands described below (legal subdivision or other description).

On slopes in excess of 40 percent or on technically unstable soils. This includes areas prone to mass soil movement.

#### For the purpose of:

Protecting steep slopes and unstable soils.

**Exceptions:** The authorized officer may grant an exception if an environmental record of review demonstrates that the nature of the proposed action could be conditioned so as not to negatively impact the stability of or productivity of the steep slopes and unstable soils identified and if it is determined that the action will meet the designated forest plan performance standards.

**Modifications:** The authorized officer may modify the area subject to the stipulation based on a BLM evaluation or monitoring results that show that the action does not contain unstable soils or slopes greater than 40 percent, or that the action utilizes construction, reclamation, and design features that would stabilize the site during occupation and restore the original contours after occupation.

A modification may be granted if an environmental analysis of the proposed action demonstrates that unstable soils do not exist on the specific site.

**Waiver:** The authorized officer may grant a waiver if it is determined that the entire lease area does not contain slopes greater than 40 percent anywhere within the leasehold.

No waiver will be granted for unstable soils.

### NO SURFACE OCCUPANCY STIPULATION Riparian Habitat – Fisheries, Wildlife, Hydrology

No surface occupancy or use is allowed on the lands described below (legal subdivision or other description).

Areas within 500 feet of outermost perimeter of riparian habitat.

#### For the purpose of:

Maintaining riparian habitat and functional integrity.

**Exceptions**: The authorized officer may grant an exception if it is determined through environmental analysis that the nature of the proposed action could be conditioned so as not to negatively impact the habitat identified. Consideration must include the degree of slope, soils, importance of the amount and type of wildlife and fish use, water quality, riparian vegetation, and other related resource values. If wetlands are present, no exceptions would be granted unless compliance can be demonstrated with Executive Order 11990.

**Modifications**: The authorized officer may modify the area subject to an environmental analysis that determines that project design or mitigation measures can be used to prevent impacts to riparian habitat. Consideration must include the variability in terrain, degree of slope, soils, importance of the amount and type of wildlife and fish use, water quality, riparian vegetation, and other related resource values. If wetlands are present, no modifications would be granted unless compliance can be demonstrated with Executive Order 11990.

Waiver: None.

# NO SURFACE OCCUPANCY STIPULATION Wyoming Range Crest

No surface occupancy or use is allowed on the lands described below (legal subdivision or other description).

Lands within 0.5 mile of the Wyoming Range Crest.

Sec.\_\_;

#### For the purpose of:

Protecting the scenic values and recreation opportunities along the Wyoming Range Crest.

**Exceptions:** None

Modifications: None

Waiver: None

### NO SURFACE OCCUPANCY STIPULATION Lander Cutoff of California National Historic Trail

### No surface occupancy or use is allowed on the lands described below (legal subdivision or other description).

Lands within 0.25 mile or to the visual horizon, whichever is less, for sections of the Lander Trail where the original ruts still exist.

Portions of parcels WYW173270 and WYW173280.

#### For the purpose of:

Protecting the many pioneer graves, tree engravings, and campsites which may be adjacent to the trail, and to protect the scenic and historic values of the trail.

Surface occupancy or use will be restricted unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts; the plan must demonstrate proposed infrastructure is either not visible or will result in a weak contrast rating.

**Exception**: The authorized officer may grant an exception if surveys determine that other historic trail remnants are not present or it is determined that the section of trail is sufficiently compromised that the action will not result in an adverse effect to the trail.

**Modification**: If surveys determine that a portion of the lease area does not contain contributing trail segments, then the stipulation may be modified. This determination shall be based upon field evaluation of the area by a qualified archaeologist/historian and subject to confirmation by the BLM.

**Waiver**: The authorized officer may grant a waiver if surveys determine that the entire lease area does not contain contributing trail segments, then the stipulation may be waived. This determination shall be based upon field evaluation of the area by a qualified archaeologist/historian and subject to confirmation by the BLM.

### NO SURFACE OCCUPANCY STIPULATION Wild River

### No surface occupancy or use is allowed on the lands described below (legal subdivision or other description).

No surface occupancy or use is allowed on the lands described below (legal subdivision or other description):

Lands within 0.25 mile on either side of the Big Fall Creek drainage within parcel WYW173278.

If a suitability study finds that the waterway corridor is not suitable for wild and scenic river classification, the stipulation will not apply and the area will be managed as directed in the forest plan (as amended), including forest plan amendment No. 2 (Wild and Scenic Rivers eligibility study and management guidance).

See Attached Maps

T.\_S., R.\_W., 6<sup>th</sup> PM

Sec. ;

#### For the purpose of:

Protecting the existing condition along the portion of the river, which has been determined to be eligible for inclusion in the National Rivers System as a wild river. If a suitability study finds that this waterway corridor is not suitable for wild and scenic river classification, the no-surface-occupancy stipulation for this purpose/resource will not apply, and the area will be managed as directed in the forest plan (aa amended), including forest plan amendment No. 2 (Wild and Scenic Rivers eligibility study and management guidance).

**Exceptions:** None

**Modifications:** The 0.25-mile boundary may be modified in accordance with the Wild and Scenic River plan.

**Waiver:** The authorized officer may grant a waiver if it is determined that the entire lease area does not include wild and scenic river attributes as verified by Forest Service staff. A waiver of this stipulation may only be granted through a land use plan amendment.

### NO SURFACE OCCUPANCY STIPULATION Inventoried Roadless Areas

No surface occupancy or use is allowed on the lands described below (legal subdivision or other description).

For all lands designated as an inventoried roadless area.

#### For the purpose of:

Preserving the natural features that contribute to roadless characteristics.

**Exceptions:** None.

**Modifications:** The authorized officer may modify the area subject to the stipulation through environmental analysis that determines the boundary of the designated roadless area has been modified and the portion of the leasehold is no longer in a designated roadless area.

**Waiver:** The authorized officer may grant a waiver if it is determined that the entire lease area does not include any designated roadless areas.

# CONTROLLED SURFACE USE STIPULATION Wildlife Mitigation

Surface occupancy or use will be restricted and is subject to the following special operating constraints.

Surface occupancy or use will be restricted to an average open road density of 0.25 mile per square mile of standard or equivalent road with 1-year to 5-year variations of 0 to 0.5 mile per square mile. Temporary roads will be returned to Elimination Class 3 or 4 Standards.

#### On the lands described below:

This applies within DFC 12 areas.

T.\_S., R.\_W., 6<sup>th</sup> PM

Sec.\_\_;

#### For the purpose of:

Limiting effects of roading, exploration and development on big game wildlife secure habitat.

**Exceptions:** The authorized officer may grant an exception if it is determined that the proposed action, through an environmental review, demonstrates that the surface-disturbing activity would not cause adverse impact, have negligible impacts, or improve the protected resource value or use as defined by forest plan objectives, standards, or conditions in the stipulation. If an exception is granted, monitoring, special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. Approvals could be subject to additional conditions of approval, reclamation measure, or best management practices. Measures applied would be based on the nature, extent, and values potentially affected by the surface-disturbing activity.

**Modifications:** The authorized officer may modify the area subject to the stipulation if an environmental analysis demonstrates that a new road or pipeline added within the forest plan designated DFC 12 area has less impact to the wildlife than an alternative route that avoids the area entirely. If a modification is granted, monitoring, special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. In such situations, that a modification may be granted, the activity would be subject to additional conditions of approval (COAs) and reclamation standards to ensure resource values are protected.

**Waiver:** The Authorized Officer may grant a waiver if it is determined that the entire lease area is not located within DFC12. A waiver may be granted if an environmental analysis determines that the areas mapped as possessing the attributes are verified to not possess those attributes.

# NO SURFACE OCCUPANCY STIPULATION Amphibian Breeding Habitat

No surface occupancy or use is allowed on the lands described below (legal subdivision or other description).

Within 500 meters (1,640 feet) of known amphibian breeding habitat (R4 sensitive species). Known breeding habitat is defined as a contiguous aquatic feature, which has been found to have evidence of sensitive amphibian breeding within a 10 year period prior to the proposed development. Evidence of breeding includes presence of eggs, tadpoles, metamorphs or adults in amplexus.

#### For the purpose of:

Avoiding disturbance to amphibians (R4 sensitive species) that would result in a trend toward federal listing or loss of viability.

**Exceptions:** An authorized officer may grant an exception if an environmental analysis demonstrates that the surface-disturbing activity; would not cause adverse impact, would have negligible impacts, or would improve the protected resource value or use as defined by forest plan objectives, standards, or conditions in the stipulation. If an exception is granted, monitoring, special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. In situations where a surface-disturbing activity/lease stipulation is excepted, the activity could be subject to additional conditions of approval, reclamation measure, or BMPs. Measures applied would be based on the nature, extent, and values potentially affected by the surface-disturbing activity.

**Modifications:** An authorized officer may grant a modification, in consultation with the U.S. Fish and Wildlife Service, if an environmental analysis demonstrates that the proposed action can be sited, conducted, or conditioned to remain compatible with habitat protection and species recovery objectives. If a modification is granted, monitoring, special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. In such situations, that a modification may be granted, the activity would be subject to additional conditions of approval (COAs) and reclamation standards to ensure resource values are protected.

**Waiver:** An authorized officer may grant a waiver if an environmental analysis determines that the areas mapped as possessing the attributes are verified to not possess those attributes.

Waivers, exceptions, and modifications will be considered on a species by species basis.

# TIMING LIMITATION STIPULATION Big Game Migration Corridors and Stopover Areas

No surface use is allowed during the following time period(s). This stipulation does not apply to operation and maintenance of production facilities.

April 1 – June 15 and October 15 – December 1 within 0.3 mile of lands mapped by Wyoming Game and Fish Department as Big Game Moderate to High Use Migration Corridors and Stopover Areas

#### On the lands described below:

#### For the purpose of:

Protecting big game moderate to high use migration corridors and stopover areas in order to prevent abandonment of critical habitats, provide connectivity between seasonal use areas, and to maintain reproductive success, recruitment, and survival.

**Exceptions:** The authorized officer may grant an exception if it is determined that the proposed action, through an environmental review determines that (a) the specific activity or requested change would not impair the quality, values, and ecological function of big game migration corridors and stopover areas, nor impair the behaviors, habitat use, or survival of big game that use migration corridors and stopover areas within the specific area; and (b) no practicable alternative is available. If an exception is granted, monitoring, special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. Approvals would be subject to additional conditions of approval and reclamation standards to ensure resource values are protected.

**Modifications:** The authorized officer may modify the area subject to the stipulation if an environmental analysis determines that the migration corridor and stopover areas change for these species as documented by Wyoming Game and Fish Department.

**Waiver:** A waiver may be granted if it is determined, in coordination with Wyoming Game and Fish Department, that the entire lease area is no longer managed as a migration corridor or stopover area.

Waivers, exceptions, and modifications will be considered on a species-by-species basis.

# NO SURFACE OCCUPANCY STIPULATION Big Game Crucial Winter Range

No surface occupancy or use is allowed on the lands described below (legal subdivision or other description).

Lands identified as big game crucial winter range.

#### For the purpose of:

Protecting wintering big game during the critical winter and early spring months of the year in order to reduce behavioral disturbances which can result in big game mortality, reduced animal fitness, or poor survivorship of young.

**Exception:** The authorized officer may grant an exception if the operator demonstrates that the crucial winter range is not occupied during the period of concern, subject to a determination by the BLM in coordination with the Wyoming Game and Fish Department, in consideration of the factors described in Appendix C Exception, Modification, and Waiver Criteria, Avoidance Criteria, and Special Management for Designated Corridors.

**Modification:** The authorized officer may modify the area subject to the stipulations based on an evaluation by the BLM, in coordination with the Wyoming Game and Fish Department, to determine that crucial winter are not present or boundaries of the subject area has been refined.

**Waiver:** The authorized officer may grant a waiver if it is determined that the entire lease area does not contain crucial winter range. This determination shall be based on an evaluation by the BLM, in coordination with the Wyoming Game and Fish Department.

Waivers, exceptions, and modifications will be considered on a species-by-species basis.

### TIMING LIMITATION STIPULATION Big Game Crucial Winter Range

No surface use is allowed during the following time period(s). This stipulation does not apply to operation and maintenance of production facilities.

November 15 - April 30 on lands identified as big game crucial winter range.

#### On the lands described below:

#### For the purpose of:

Protecting wintering big game during the critical winter and early spring months of the year in order to reduce behavioral disturbances which can result in big game mortality, reduced animal fitness, or poor survivorship of young.

Exceptions: The authorized officer may grant an exception if it is determined that the proposed action, through an environmental review determines that (a) between the period of November 15 – December 31 if mild winter conditions exist, and only if wintering big game animals are less concentrated on winter ranges and have adequate available forage outside of the specific exception area; (b) between November 15 and April 30 for a species, the proposed action can be conditioned so as not to interfere with current or subsequent habitat function (i.e. the proposed activities will not lessen overall habitat quality in future years), not compromise animal condition and health, and would not impair values, behaviors, habitat use or quality, or impact the survival of elk, deer, or moose present within the specific area. An exception may be granted, in consultation with Wyoming Game and Fish Department, to conduct maintenance and operations limited to those activities that would not currently or subsequently interfere with habitat function or compromise animal condition and health within the project vicinity. If an exception is granted, monitoring, special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. In such situations that an exception may be granted, the activity would be subject to additional conditions of approval (COAs) and reclamation standards to ensure resource values are protected.

**Modifications:** The authorized officer may grant a modification to a portion of a leasehold if an environmental analysis, in consultation with Wyoming Game and Fish Department, determines that the necessary annual closure dates or boundaries of big game winter range use have changed for a species.

**Waiver:** A waiver may be granted if it is determined, in coordination with Wyoming Game and Fish Department, that the entire lease area is no longer managed as crucial winter range.

Waivers, exceptions, and modifications will be considered on a species-by-species basis.

# TIMING-LIMITATION STIPULATION Big Game Winter Range/Yearlong Range

No surface use is allowed during the following time period(s). This stipulation does not apply to operation and maintenance of production facilities.

November 15 – April 30 on lands identified as big game winter range and/or yearlong range.

#### On the lands described below:

#### For the purpose of:

Protecting big game winter range and/or yearlong range.

**Exception:** An exception may be granted if an environmental analysis demonstrates that the activity would have negligible impacts and would not cause adverse effects to species or their critical habitats. If an exception is granted, monitoring, special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. In such situations that an exception may be granted, the activity would be subject to additional Conditions of Approval (COAs) and reclamation standards to ensure resource values are protected.

**Modification:** A modification may be granted if an environmental analysis determines that the species has relocated; the occupied habitat has increased or decreased; or that the nature or conduct of the activity, as proposed or conditioned, would not impair values associated with the maintenance or recovery of the species. A modification may be granted if conditions have changed such that there is no reasonable likelihood of site occupation over a minimum 10-year period.

**Waiver:** A waiver may be granted if it is determined, in coordination with WGFD, that the entire lease area is no longer managed as winter range or yearlong range.

Waivers, exceptions, and modifications will be considered on a species-by-species basis.

# CONTROLLED SURFACE USE STIPULATION Big Game Winter Range/Yearlong Range

Surface occupancy or use will be restricted and is subject to the following special operating constraints.

Well pad density restricted to no more than one well pad per section with total oil and gas related disturbance of 32 acres/section or less (5% over 10 square miles).

#### On the lands described below:

#### For the purpose of:

Protecting big game winter range and yearlong range.

**Exception:** The authorized officer may grant an exception if an environmental record of review determines that, the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life history, or behavioral needs of big game. An exception to the stated limits may be granted when offsite mitigation is determined to provide an overall beneficial effect to big game habitat and populations.

The BLM can and does grant exceptions if the BLM, in coordination with the Wyoming Game and Fish Department, determines that granting an exception would not adversely impact the population being protected.

**Modification:** The authorized officer may modify the area subject to the stipulation or surface occupancy criteria if an environmental record of review finds that a portion of the controlled-surface-use area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of big game.

**Waiver:** The authorized officer may grant a waiver if it is determined by the BLM, in coordination with the State wildlife agency, it is determined that the site is no longer considered in the land use plan to be within crucial winter or yearlong range for big game.

Waivers, exceptions, and modifications will be considered on a species-by-species basis.

# CONTROLLED SURFACE USE STIPULATION Big Game Parturition Area

#### Surface occupancy or use is restricted and is subject to the following special operating constraints.

Well pad density restricted to no more than one well pad per section with total oil and gas related disturbance of 32 acres/section or less (5% over 10 square miles).

#### On the lands described below:

Big game parturition (birthing) areas.

Sec.\_\_;

#### For the purpose of:

Reducing behavioral disruption during parturition and early young rearing period.

**Exceptions:** The authorized officer may grant an exception if an environmental record of review determines that, the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life history, or behavioral needs of big game. An exception to the stated limits may be granted when offsite mitigation is determined to provide an overall beneficial effect to big game habitat and populations.

The BLM can and does grant exceptions if the BLM, in coordination with the Wyoming Game and Fish Department, determines that granting an exception would not adversely impact the population being protected.

**Modifications:** The authorized officer may modify the area subject to the stipulation or surface occupancy criteria if an environmental record of review finds that a portion of the controlled-surface-use area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of big game.

**Waiver:** The authorized officer may grant a waiver if it is determined by the BLM, in coordination with the State wildlife agency, it is determined that the site is no longer considered in the land use plan to be within a parturition area for big game.

Waivers, exceptions, and modifications will be considered on a species-by-species basis.

### TIMING LIMITATION STIPULATION Elk Parturition Areas

No surface use is allowed during the following time period(s). This stipulation does not apply to operation and maintenance of production facilities.

Exploration, drilling and development activity will not be allowed during the period from May 15 through June 30.

#### On the lands described below:

#### For the purpose of:

Protecting key elk parturition habitats in order to prevent abandonment of critical habitats and to maintain elk reproductive success, juvenile recruitment, and survival of adult and young.

**Exception:** The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of elk. The BLM can and does grant exceptions if the BLM, in coordination with the Wyoming Game and Fish Department, determines that granting an exception would not adversely impact the population being protected.

**Modification:** The authorized officer may modify the area subject to the stipulation if an environmental record of review finds that a portion of the area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the elk.

**Waiver:** This stipulation may be waived over the entire lease if, in coordination with the Wyoming Game and Fish Department, it is determined that the lease area is no longer within an elk parturition area.

Waivers, exceptions, and modifications will be considered on a habitat by habitat basis.

# NO SURFACE OCCUPANCY STIPULATION Bighorn Sheep Lambing, Rutting and Winter Ranges

No surface occupancy or use is allowed on the lands described below (legal subdivision or other description).

For those habitats identified as bighorn sheep lambing, rutting and winter ranges.

#### For the purpose of:

Protecting important bighorn sheep habitat.

**Exception:** The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of bighorn sheep. The BLM can and does grant exceptions if the BLM, in coordination with the Wyoming Game and Fish Department, determines that granting an exception would not adversely impact the population being protected.

**Modification:** The authorized officer may modify the area subject to the stipulation if an environmental record of review finds that a portion of the area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the bighorn sheep.

**Waiver:** This stipulation may be waived over the entire lease if, in coordination with the State wildlife agency, it is determined that the site is no longer within a bighorn sheep lambing or rutting area, or winter range.

Waivers, exceptions, and modifications will be considered on a habitat-by-habitat basis.

## TIMING LIMITATION STIPULATION Bighorn Sheep Occupied Seasonal Ranges

No surface use is allowed during the following time period(s). This stipulation does not apply to operation and maintenance of production facilities.

No surface disturbance or use within 1 mile of occupied bighorn sheep seasonal ranges from November 1 to June 30.

#### On the lands described below:

#### For the purpose of:

Protecting important bighorn sheep habitat.

**Exceptions:** The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of bighorn sheep. The BLM can and does grant exceptions if the BLM, in coordination with the Wyoming Game and Fish Department, determines that granting an exception would not adversely impact the population being protected.

**Modification:** The authorized officer may modify the area subject to the stipulation if an environmental record of review finds that a portion of the area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the bighorn sheep.

**Waiver:** This stipulation may be waived over the entire lease if, in coordination with the Wyoming Game and Fish Department, it is determined that the entire lease area is no longer within a bighorn sheep lambing or rutting area, or a winter range.

Waivers, exceptions, and modifications will be considered on a habitat-by-habitat basis.

# NO SURFACE OCCUPANCY STIPULATION Lynx Home Range

No surface occupancy or use is allowed on the lands described below (legal subdivision or other description).

Within identified lynx home range habitat.

#### For the purpose of:

Protecting denning habitat for Canada lynx in compliance with the Endangered Species Act.

**Exceptions:** The authorized officer may grant an exception if an environmental analysis demonstrates that the activity would have negligible impacts and would not cause adverse effects to species or their critical habitats. If an exception is granted, monitoring, special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. In such situations that an exception may be granted, the activity would be subject to additional conditions of approval (COAs) and reclamation standards to ensure resource values are protected.

Exceptions will only be considered if the Forest Service determines, using ESA Section 7 consultation/conference with USFWS, that the specific activity or requested change would not impair values associated with the maintenance or recovery of the species.

**Modifications:** The authorized officer may grant a modification if an environmental analysis determines that the species has relocated; the occupied habitat has increased or decreased; or that the nature or conduct of the activity, as proposed or conditioned, would not impair values associated with the maintenance or recovery of the species. A modification may be granted if conditions have changed such that there is no reasonable likelihood of site occupation over a minimum 10-year period. Section 7 consultation/conferencing procedures would be instituted in those instances where a modification is being considered that involves a federally listed or proposed species.

**Waiver:** The authorized officer may grant a waiver if an environmental analysis determines that the species is delisted for a period of 5 years or more, becomes extinct or if the site has been unoccupied by the species for a minimum period of 15 years. Section 7 consultation/conferencing procedures would be instituted in those instances where a waiver is being considered that involves a federally listed or proposed species.

# CONTROLLED SURFACE USE STIPULATION Canada Lynx Habitat

Surface occupancy or use is subject to the following special operating constraints.

In Canada lynx habitat, utilize remote monitoring for producing wells to reduce snow compaction due to accessing sites in the winter.

#### On the lands described below:

#### For the purpose of:

Protecting lynx habitat.

**Exceptions:** An exception may be granted if an environmental analysis demonstrates that the activity would have negligible impacts and would not cause adverse effects to species or their critical habitats. If an exception is granted, monitoring, special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. In such situations that an exception may be granted, the activity would be subject to additional Conditions of Approval (COAs) and reclamation standards to ensure resource values are protected.

Exceptions will only be considered if the Forest Service determines, using ESA Section 7 consultation/conference with USFWS, that the specific activity or requested change would not impair values associated with the maintenance or recovery of the species.

**Modifications:** A modification may be granted if an environmental analysis determines that the species has relocated; the occupied habitat has increased or decreased; or that the nature or conduct of the activity, as proposed or conditioned, would not impair values associated with the maintenance or recovery of the species. A modification may be granted if conditions have changed such that there is no reasonable likelihood of site occupation over a minimum 10-year period. Section 7 consultation/conferencing procedures would be instituted in those instances where a modification is being considered that involves a federally listed or proposed species.

**Waiver:** A waiver may be granted if an environmental analysis determines that the species is delisted for a period of 5 years or more, becomes extinct or if the site has been unoccupied by the species for a minimum period of 15 years. Section 7 consultation/conferencing procedures would be instituted in those instances where a waiver is being considered that involves a federally listed or proposed species.

# TIMING LIMITATION STIPULATION Gray Wolf Natal Den and Rendezvous Sites

No surface use is allowed during the following time period(s). This stipulation does not apply to operation and maintenance of production facilities.

No surface disturbance within 1 mile of: occupied den sites from April 1 – June 15 and/or established rendezvous sites from June 15 – July 31.

#### On the lands described below:

#### For the purpose of:

Protecting gray wolf essential habitat elements.

**Exceptions:** An exception may be granted in coordination with U.S. Fish and Wildlife Service (USFWS) if an environmental analysis establishes that the activity would not cause abandonment of the site or otherwise be detrimental to maintenance and distribution of viable populations across the forest. If an exception is granted, monitoring, special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. In such situations that an exception may be granted, the activity would be subject to additional Conditions of Approval (COAs) and reclamation standards to ensure resource values are protected.

**Modifications:** A modification may be granted in coordination with the USFWS if an environmental analysis establishes that the species has relocated; the occupied habitat has increased; or that the nature or conduct of the activity, as proposed or conditioned, would not impair values associated with the maintenance or recovery of the species on the forest.

**Waiver:** A waiver may be granted, in consultation with USFWS, or waiver may be granted upon delisting of the species and in coordination with a Forest Service wildlife biologist.

Waivers, exceptions, and modifications will be considered on a habitat by habitat basis.

### TIMING LIMITATION STIPULATION Bald Eagle Winter Roost and Perch Sites

No surface use is allowed during the following time period(s) or within specified distances to eagle perch and roost sites. This stipulation does not apply to operation and maintenance of production facilities.

No surface use is allowed within 0.5 mile of known bald eagle winter hunting perch sites or winter communal night roost sites from October 1 to April 1.

This stipulation does not apply to operation and maintenance of production facilities.

#### On the lands described below:

#### For the purpose of:

Preventing impacts to wintering bald eagles in order to increase the likelihood of winter survival.

**Exception:** The authorized officer may grant an exception if the operator demonstrates that there are no active or occupied nests during the period of concern, subject to confirmation by the BLM, in coordination with the Wyoming Game and Fish Department and/or U.S. Fish and Wildlife Service, as necessary.

**Modification:** The authorized officer may modify the area subject to the stipulations based on a BLM evaluation, in coordination with the Wyoming Game and Fish Department and/or the U.S. Fish and Wildlife Service, as necessary. The stipulation may be modified based on negative or positive monitoring results, or if it is determined that the action will not impair the function or the suitability of the habitat, or cause nest abandonment.

**Waiver:** The authorized officer may grant a waiver if it is determined that the entire lease area does not contain active raptor nests or suitable habitat for raptors. This determination shall be based on a BLM evaluation of the area, in coordination with the Wyoming Game and Fish Department and/or the U.S. Fish and Wildlife Service, as necessary.

### NO SURFACE OCCUPANCY STIPULATION Golden Eagle Active Nest Sites

No surface occupancy or use is allowed on the lands described below (legal subdivision or other description).

No surface disturbance is allowed within 0.5 mile of active nest sites.

Sec.\_\_;

#### For the purpose of:

Preventing impacts to breeding raptors in order to increase the likelihood of successful reproduction and recruitment of young.

**Exceptions:** An exception may be granted if an environmental analysis of the proposed action determines that the nature or conduct of the activity could be conditioned so as not to interfere with adult attendance and visitation of the nest site, jeopardize survival of the eggs, nestlings, or fledglings, or otherwise impair the utility of the breeding territory for current or subsequent successful reproductive activity or occupancy. An exception may be granted if the breeding territory is unattended or remains unoccupied for the current breeding season and it is late enough in the breeding season of the project year to assure that the species would not re-nest. A site specific exception may be granted, in consultation with Wyoming Game and Fish Department (WGFD) or the U.S. Fish and Wildlife Service (USFWS), if an environmental analysis determines that the specific activity or requested change would not impair values, behaviors, habitat use and quality, and reproductive success of raptor species present within the specific TL area. Exceptions must be consistent with policies derived from federal administration of the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. If an exception is granted, monitoring, special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. In such situations that an exception may be granted, the activity would be subject to additional Conditions of Approval (COAs) and reclamation standards to ensure resource values are protected.

**Modifications:** A site specific modification to the timing-limitation dates or buffer distances may be granted if an environmental analysis determines that a portion of the area is not essential to breeding territory utility or function, or that the proposed action could be conditioned so as not to interfere with adult attendance and visitation of the nest site, jeopardize survival of the eggs nestlings, or fledglings, or otherwise impair the utility of the breeding territory for current or subsequent successful reproduction activities or occupation. A modification may be granted if documentation shows the breeding territory has remained unoccupied for a minimum of 5 years, or that the site conditions of the breeding territory have changed such that there is no reasonable likelihood of breeding territory occupation for a subsequent minimum period of 10 years. Timing limitation dates and buffer distances may be modified if improved biological information based on the best available science indicates that there are more accurate breeding season dates and more appropriate buffer distances for raptors, as recognized by WGFD, USFWS, and the Forest Service. A modification must be consistent with policies derived from federal administration of the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

**Waiver:** A waiver may be granted if it is determined, in coordination with WGFD and/or the USFWS, that the entire lease area does not contain active nests or suitable habitat.

### TIMING LIMITATION STIPULATION Raptor Species Active Nest Sites

No surface use is allowed during the following time period(s). This stipulation does not apply to operation and maintenance of production facilities.

No surface use is allowed within active raptor nest sites during the timeframes specified below. (Times may shift slightly in either direction, depending on weather variation and site conditions, based on surveys by a qualified biologist.)

Current species of concern, applicable timing restriction and buffer zones (shown below as the radius distance from an active nest) include:

- ♦ Bald Eagle, 1/2 mile, 2/1-8/15
- Peregrine Falcon, 1/2 mile, 3/1 7/31 or 7/1-9/15 for hack sites, depending on the cliff nest height within 1 mile of active nest sites

#### On the lands described below:

#### For the purpose of:

Protecting priority habitat such as nesting areas, fledging areas, and foraging habitat of sensitive raptor species in order to prevent abandonment of nests and territories and to maintain reproductive success, recruitment, and survival.

**Exceptions:** An exception may be granted by the Authorized Officer to these dates if an agency biologist: verifies that the nest site is unattended for the current season and it is late enough in the season to assure that the species would not utilize the nest for re-nesting activities following a failure at this or alternate nest sites or confirms that the birds have fledged and left the post-fledgling area for the season.

**Modifications:** This lease stipulation dates and buffer distances may be modified by the Authorized Officer if an environmental analysis indicates that more accurate dates and buffer distances, as recognized by the management agency and WGFD, are available for the raptor species in the planning area.

**Waiver:** A waiver may be granted if the territory has remained unoccupied for 5 years or conditions change such that there is no reasonable likelihood of site occupation over a minimum 10-year period.

Waivers, exceptions, and modifications will be considered on a species-by-species basis.

### TIMING LIMITATION STIPULATION Raptors Species Active Nest Sites

No surface use is allowed during the following time period(s). This stipulation does not apply to operation and maintenance of production facilities.

No surface use is allowed within active raptor nest sites during the timeframes specified below. (Times may shift slightly in either direction, depending on weather variation and site conditions, based on surveys by a qualified biologist.)

Current species of concern, applicable timing restriction and buffer zones (shown below as the radius distance from an active nest) include:

- ♦ Bald Eagle, 1/2 mile, 2/1-8/15
- ◆ Peregrine Falcon, 1/2 mile, 3/1 7/31 or 7/1-9/15 for hack sites, depending on the cliff nest height within 1 mile of active nest sites
- ♦ Northern Goshawk, 1/2 mile, 4/1-8/15
- Owl, 1/4 mile, 2/1-9/15
- Golden Eagle, 1/2 mile, 1/15- 7/31

#### On the lands described below:

#### For the purpose of:

Protecting priority habitat such as nesting areas, fledging areas, and foraging habitat of sensitive raptor species in order to prevent abandonment of nests and territories and to maintain reproductive success, recruitment, and survival.

**Exceptions:** An exception may be granted by the Authorized Officer to these dates if an agency biologist: verifies that the nest site is unattended for the current season and it is late enough in the season to assure that the species would not utilize the nest for re-nesting activities following a failure at this or alternate nest sites or confirms that the birds have fledged and left the post-fledgling area for the season.

**Modifications:** This lease stipulation dates and buffer distances may be modified by the Authorized Officer if an environmental analysis indicates that more accurate dates and buffer distances, as recognized by the management agency and WGFD, are available for the raptor species in the planning area.

**Waiver:** A waiver may be granted if the territory has remained unoccupied for 5 years or conditions change such that there is no reasonable likelihood of site occupation over a minimum 10-year period.

Waivers, exceptions, and modifications will be considered on a species-by-species basis.

### NO SURFACE OCCUPANCY STIPULATION Raptor Species Active Nest Sites

No surface occupancy or use is allowed on the lands described below (legal subdivision or other description).

No surface use is allowed within 0.25 mile of an active raptor nest site

Current species of concern include:

- Bald Eagle
- Peregrine Falcon
- Northern Goshawk
- Owl
- Golden Eagle

#### On the lands described below:

#### For the purpose of:

Protecting nest trees of sensitive raptor species in order to prevent abandonment of territories and to maintain reproductive success, recruitment, and survival.

**Exceptions:** An exception may be granted by the Authorized Officer if an agency biologist verifies that the nest site is no longer used or providing functional habitat.

**Modifications:** A modification may be authorized by the Authorized Officer if an environmental analysis indicates the nest site is no longer used or providing functional habitat.

**Waiver:** A waiver may be granted by the Authorized Officer if the territory has remained unoccupied for 5 years or conditions change such that there is no reasonable likelihood of site occupation over a minimum 10-year period.

Waivers, exceptions, and modifications will be considered on a species by species and/or habitat by habitat basis.

### TIMING LIMITATION STIPULATION Raptors (Special Status Species) Nest Sites

No surface use is allowed during the following time period(s). This stipulation does not apply to operation and maintenance of production facilities.

Noise levels maintained to 49 dB or less at known bald eagle, golden eagle, peregrine falcon, owl, and northern goshawk nest sites during breeding season from February 1 to August 15.

#### On the lands described below:

#### For the purpose of:

Protecting the nest sites of special status raptor species

**Exceptions:** The authorized officer may grant an exception if an environmental analysis of the proposed action determines that the nature or conduct of the activity could be conditioned so as not to interfere with adult attendance and visitation of the nest site, jeopardize survival of the eggs, nestlings, or fledglings, or otherwise impair the utility of the breeding territory for current or subsequent successful reproductive activity or occupancy. An exception may be granted if the breeding territory is unattended or remains unoccupied for the current breeding season and it is late enough in the breeding season of the project year to assure that the species would not re-nest. A site-specific exception may be granted, in consultation with Wyoming Game and Fish Department or U.S. Fish and Wildlife Service, if an environmental analysis determines that the specific activity or requested change would not impair values, behaviors, habitat use and quality, and reproductive success of raptor species present within the specific TL area. Exceptions must be consistent with policies derived from federal administration of the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. If an exception is granted, monitoring, special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. In such situations that an exception may be granted, the activity would be subject to additional conditions of approval (COAs) and reclamation standards to ensure resource values are protected.

**Modifications:** The authorized officer may grant a site-specific modification to the timing limitation date if an environmental analysis determines that a portion of the area is not essential to breeding territory utility or function, or that the proposed action could be conditioned so as not to interfere with adult attendance and visitation of the nest site, jeopardize survival of the eggs nestlings, or fledglings, or otherwise impair the utility of the breeding territory for current or subsequent successful reproduction activities or occupation. A modification may be granted if documentation shows the breeding territory has remained unoccupied for a minimum of 5 years, or that the site conditions of the breeding territory have changed such that there is no reasonable likelihood of breeding territory occupation for a subsequent minimum period of 10 years. Timing limitation date may be modified if improved biological information based on the best available science indicates that there are more accurate breeding season dates for raptors, as recognized by Wyoming Game and Fish Department, U.S. Fish and Wildlife Service, and the Forest Service. A modification must be consistent with policies derived from federal administration of the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

**Waiver:** The authorized officer may grant a waiver if it is determined, in coordination with Wyoming Game and Fish Department and/or the U.S. Fish and Wildlife Service, that the entire lease area does not contain active nests or suitable habitat.

Waivers, exceptions, and modifications will be considered on a species-by-species basis.

## NO SURFACE OCCUPANCY STIPULATION Sage-grouse Leks inside Priority Management Areas

No surface use is allowed during the following time period(s). This stipulation does not apply to operation and maintenance of production facilities.

Occupied greater sage-grouse leks inside designated core areas and connectivity habitat areas. This area encompasses occupied Greater Sage-Grouse leks inside designated core areas and connectivity areas. No surface occupancy or use is allowed within a six-tenths (0.6) mile radius of the perimeter of occupied greater sage-grouse leks inside designated core areas and connectivity areas, as mapped on the Field Office GIS database.

#### On the lands described below:

#### For the purpose of:

To protect occupied Greater Sage-Grouse leks and associated seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse in proximity to leks, from habitat fragmentation and loss and Greater Sage-Grouse populations from disturbance inside designated core areas and connectivity areas.

**Exception:** The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse. The BLM can and does grant exceptions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected.

**Modification:** The authorized officer may modify the area subject to the stipulation or the NSO criteria if an environmental record of review finds that a portion of the NSO area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting.

**Waiver:** This stipulation may be waived over the entire lease if, in coordination with the State wildlife agency, it is determined that the site is no longer considered in the land use plan to be within a Greater Sage-Grouse designated core area or connectivity area, or Greater Sage-Grouse are no longer a BLM sensitive or special status species or are not listed or determined to be warranted for listing by the U.S. Fish and Wildlife Service as threatened or endangered under the Endangered Species Act.

# NO SURFACE OCCUPANCY STIPULATION Sage-grouse Leks outside Forest Service Core and Connectivity Habitat Areas

No surface use is allowed during the following time period(s). This stipulation does not apply to operation and maintenance of production facilities.

Occupied Greater Sage-Grouse leks outside designated core areas and connectivity areas. This area encompasses occupied Greater Sage-Grouse leks outside designated core areas and connectivity areas. No surface occupancy or use is allowed within a one-quarter (0.25) mile radius of the perimeter of occupied Greater Sage-Grouse leks outside designated core areas and connectivity areas, as mapped on the Field Office GIS database.

#### On the lands described below:

#### For the purpose of:

To protect occupied Greater Sage-Grouse leks, and associated seasonal habitat, life- history, or behavioral needs of Greater Sage-Grouse in proximity to leks, from habitat fragmentation and loss, and Greater Sage-Grouse populations from disturbance outside designated core areas and connectivity areas..

**Exception:** The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse. The BLM can and does grant exceptions if the BLM, in coordination with the Wyoming Game and Fish Department, determines that granting an exception would not adversely impact the population being protected.

**Modification:** The authorized officer may modify the area subject to the stipulation or the no surface occupancy (NSO) criteria if an environmental record of review finds that a portion of the NSO area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting.

**Waiver:** This stipulation may be waived over the entire lease if, in coordination with the State wildlife agency, it is determined that the site is no longer considered in the land use plan to be within a Greater Sage-Grouse designated core area or connectivity area, or Greater Sage-Grouse are no longer a BLM sensitive or special status species or are not listed or determined to be warranted for listing by the U.S. Fish and Wildlife Service as threatened or endangered under the Endangered Species Act.

# TIMING LIMITATION STIPULATION Restrict Noise in Sage Grouse General and Priority Habitat

No surface use is allowed during the following time period(s). This stipulation does not apply to operation and maintenance of production facilities.

During lekking (March 1 to May 15), restrict noise to 10 dB above ambient (not to exceed 20-24 dB) measured at the perimeter of an occupied lek from 6 p.m. to 8 a.m.

#### On the lands described below:

#### For the purpose of:

Preventing disruption of reproductive activity during the production period

**Exceptions:** The authorized officer may grant an exception if an environmental analysis and coordination with the Wyoming Game and Fish Department indicate that the proposed action could be conditioned so as not to affect breeding behavior, nest attendance, egg/chick survival, or nesting success. An exception could also be granted if the proponent, Forest Service, and Wyoming Game and Fish Department negotiate compensation that would satisfactorily offset the anticipated loss of nesting habitat or nesting activities. Actions designed to enhance the long term utility or availability of suitable nest habitat may be excepted.

**Modifications:** The authorized officer may modify the size or dates of the timing limitation area if an environmental analysis indicates that the proposed action could be conditioned so as not to affect nest attendance, egg/chick survival, or nesting success. Seasonal or daily timeframes may be modified (March 1- May 15) if operations could be conditioned to not disrupt lek attendance, breeding behavior, and bird distribution within 0.6-mile radius of the lek during the breeding period. With the primary objective of allowing for 90% of initial nesting attempts to progress through hatch, timeframes may also be adjusted in nesting habitat as supported by appropriate monitoring data.

**Waiver:** The authorized officer may grant a waiver if, in cooperation with the Wyoming Game and Fish Department, it is determined that the lease area is no longer capable of supporting suitable lekking activity.

# TIMING LIMITATION STIPULATION Sage Grouse Priority Core Habitat

No surface use is allowed during the following time period(s). This stipulation does not apply to operation and maintenance of production facilities.

Greater sage-grouse breeding, nesting, and early brood-rearing habitats inside designated core areas. This area encompasses Greater Sage-Grouse breeding, nesting, and early brood-rearing habitats inside designated core areas. No surface use is allowed during March 1 – June 30 inside designated core areas.

#### On the lands described below:

### For the purpose of:

To seasonally protect Greater Sage-Grouse breeding, nesting, and early brood-rearing habitats from disruptive activities inside designated core areas.

**Exception:** The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not affect reproductive displays, nest attendance, egg or chick survival, or early brood-rearing success. Actions designed to enhance the long-term utility or availability of suitable greater sage-grouse habitat may be exempted from this timing limitation. The BLM can and does grant exceptions to seasonal restrictions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected.

**Modification:** The authorized officer may modify the size and shape of the TLS area or the TLS criteria if an environmental record of review indicates the actual habitat suitability for seasonal Greater Sage-Grouse activities is greater or less than the stipulated area, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the greater sage-grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting.

**Waiver:** This stipulation may be waived over the entire lease if, in coordination with the State wildlife agency, it is determined that the described lands are no longer considered in the land use plan to be within a greater sage-grouse designated core area, or are incapable of serving the long-term requirements of greater sage-grouse breeding, nesting, or early brood-rearing habitat and that these ranges no longer warrant consideration as components of greater sage-grouse breeding, nesting, or early brood-rearing habitat.

# TIMING LIMITATION STIPULATION Sage Grouse General Habitat

No surface use is allowed during the following time period(s). This stipulation does not apply to operation and maintenance of production facilities.

Greater sage-grouse breeding, nesting, and early brood-rearing habitat outside designated core areas and connectivity areas. This area encompasses greater sage-grouse breeding, nesting, and early brood-rearing habitat outside designated core areas and connectivity areas. No surface use is allowed during March 15 – June 30 in greater sage-grouse breeding, nesting, and early brood-rearing habitats outside designated core areas and connectivity areas, within two miles of an occupied lek.

#### On the lands described below:

#### For the purpose of:

To seasonally protect greater sage-grouse breeding, nesting, and early brood-rearing habitats from disruptive activities outside designated core areas and connectivity areas, within two miles of an occupied lek

**Exceptions:** The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not affect reproductive displays, nest attendance, egg or chick survival, or early brood-rearing success. Actions designed to enhance the long-term utility or availability of suitable greater sage-grouse habitat may be exempted from this timing limitation. The BLM can and does grant exceptions to seasonal restrictions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected.

**Modifications:** The authorized officer may modify the size and shape of the timing limitation stipulation area or the timing limitation stipulation criteria if an environmental record of review indicates the actual habitat suitability for seasonal greater sage-grouse activities is greater or less than the stipulated area, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the greater sage-grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting.

**Waiver:** This stipulation may be waived over the entire lease if, in coordination with the State wildlife agency, it is determined that the described lands are incapable of serving the long-term requirements of greater sage-grouse breeding, nesting, or early brood-rearing habitat, and that these ranges no longer warrant consideration as components of greater sage-grouse breeding, nesting, or early brood-rearing habitat.

### CONTROLLED SURFACE USE STIPULATION Priority Sage Grouse Habitat

### Surface occupancy or use is subject to the following special operating constraints.

Greater sage-grouse designated core areas. This area encompasses greater sage-grouse designated core areas. Surface occupancy or use will be restricted to no more than an average of one disturbance location per 640 acres using the Disturbance Density Calculation Tool (DDCT), and the cumulative value of all applicable surface disturbances, existing or future, must not exceed 5 percent of the DDCT area, as described in the DDCT.

This lease does not guarantee the lessee the right to occupy the surface of the lease for the purpose of producing oil and natural gas within Greater Sage-Grouse designated core areas. The surface occupancy restriction criteria identified in this stipulation may preclude surface occupancy and may be beyond the ability of the lessee to meet due to existing surface disturbance on Federal, State, or private lands within designated core areas or surface disturbance created by other land users. The BLM may require the lessee or operator to enter into a unit agreement or drilling easement to facilitate the equitable development of this and surrounding leases.

#### On the lands described below:

### For the purpose of:

To protect Greater Sage-Grouse designated core areas from habitat fragmentation and loss.

**Exceptions:** The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of greater sage-grouse. An exception to the stated limits may be granted when offsite mitigation is determined to provide an overall beneficial effect to Greater Sage-Grouse habitat and populations. The BLM can and does grant exceptions if the BLM, in coordination with the Wyoming Game and Fish Department, determines that granting an exception would not adversely impact the population being protected.

**Modifications:** The authorized officer may modify the area subject to the stipulation or surface occupancy criteria if an environmental record of review finds that a portion of the CSU area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the greater sage-grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting.

**Waiver:** This stipulation may be waived over the entire lease if, in coordination with the State wildlife agency, it is determined that the site is no longer considered in the land use plan to be within a greater sage-grouse designated core area, or greater sage-grouse are no longer a BLM sensitive or special status species or are not listed or determined to be warranted for listing by the U.S. Fish and Wildlife Service as threatened or endangered under the Endangered Species Act.

# CONTROLLED SURFACE USE STIPULATION Priority Sage Grouse Habitat

#### Surface occupancy or use is subject to the following special operating constraints.

In priority-core habitat management areas and sagebrush focal areas, limit the density of activities related to oil and gas development activities to no more than an average of one pad per 640 acres, using the current Density Disturbance Calculation Tool process or its replacement, as described in the Wyoming 9 Greater Sage-grouse Amendment (Appendix I). Do not authorize surface disturbance and disruptive activities unless all existing discrete anthropogenic disturbances cover less than 5% of the suitable habitat in the surrounding area using the current Density Disturbance Calculation Tool process or its replacement, as described in the Wyoming 9 Greater Sage-grouse Amendment (Appendix I), and the new use will not cause exceedance of the 5% cap.

#### On the lands described below:

#### For the purpose of:

Maintaining the integrity of important priority-core habitat to maintain sustainable local populations.

**Exceptions:** The Forest Service in coordination with Wyoming Game and Fish Department, may grant an exception to this stipulation if an environmental analysis indicates that the proposed or conditioned activities would not affect the long term suitability or utility of priority-core habitat for sage-grouse. An exception is described in GRSG-M-LM-ST-097-Standard (Wyoming 9 GRSG Amendment)

**Modifications:** The Forest Service in coordination with Wyoming Game and Fish Department, may grant a modification to this stipulation if an environmental analysis indicates that the proposed or conditioned activities would not affect the long term suitability or utility of priority-core habitat for sagegrouse.

**Waiver:** The Forest Service in coordination with Wyoming Game and Fish Department, may grant a waiver to this stipulation if site conditions have changed sufficient to permanently preclude sage-grouse occupation of the lease area.

### Appendix D: Wyoming Range Oil and Gas Leases

The following tables display information for the leases under analysis. Note, this list has been updated since 2011 to remove lease parcels upon request of the lessees. There are 12 leases in suspension representing a total of 20,963 acres with bid amounts totaling \$2,598,202. There are 18 leases pending representing 18,531 acres with bid amounts totaling \$1,621,276. All leases cover 39,493 acres with a total bid value of \$4,219,478.

Table 2. Leases in suspension

BLM Serial Number Legal Land Description	Acreage	Sale Date	Bid Amount	Effective Date	Status of Lease	Lessees of Record
WYW172354 T 35 N, R 114 W Sec 20: All; Sec 29: All	1,280.00	12/06/2005	\$352,000.00	05/01/2006	Suspension 07/10/2006	Stanley Energy Inc.
WYW172845 T 35 N, R 113 W Sec 31: Lots 1-4, NENW, SESW	209.72	04/04/2006	\$420.00	07/01/2006	Suspension 09/21/2006	Kirkwood Oil & Gas LLC
WYW172848 T 34 N, R 114 W Sec 1: Lots 1-4, S2N2, S2 Sec 2: Lots 1-4, S2N2, S2 Sec 3: Lots 1-4, S2N2, S2	1,929.20	04/04/2006	\$106,150.00	07/01/2006	Suspension 09/21/2006	Stanley Energy Inc.
WYW172849 T 35 N, R 114 W Sec 1: Lots 1-7, SWNE, S2NW, SW, W2SE Sec 2: Lots 1-4, S2N2, S2 Sec 11: All Sec 12: Lots 1-4, W2E2, W2	2,541.30	04/04/2006	\$383,842.00	07/01/2006	Suspension 09/21/2006	Kerr McGee O&G Onshore LP
WYW172850 T 35 N, R 114 W Sec 3: Lots 1-4, S2N2, S2 Sec 4: Lots 1-4, S2N2, S2 Sec 9: All; Sec 10: All	2,535.24	04/04/2006	\$760,800.00	07/01/2006	Suspension 09/21/2006	Kerr McGee O&G Onshore LP
WYW172851 T 35 N, R 114 W Sec 8: All; Sec 15: All Sec 16: All; Sec 17: All	2,560.00	04/04/2006	\$355,840.00	07/01/2006	Suspension 09/21/2006	Stanley Energy Inc.

BLM Serial Number Legal Land Description	Acreage	Sale Date	Bid Amount	Effective Date	Status of Lease	Lessees of Record
WYW172852 T 35 N, R 114 W Sec 13: Lots 1-4, W2E2, W2 Sec 14: All Sec 24: Lots 1-4, W2E2, W2	1,926.22	04/04/2006	\$105,985.00	07/01/2006	Suspension 09/21/2006	Stanley Energy Inc.
WYW172853 T 35 N, R 114 W Sec 19: Lots 1-4, E2, E2W2 Sec 30: Lots 1, 2, NE, E2NW	940.55	04/04/2006	\$145,855.00	07/01/2006	Suspension 09/21/2006	Stanley Energy Inc.
WYW172854 T 35 N, R 114 W Sec 21: All; Sec 22: All Sec 27: All; Sec 28: All	2,560.00	04/04/2006	\$140,800.00	07/01/2006	Suspension 09/21/2006	Stanley Energy Inc.
WYW172855 T 35 N, R 114 W Sec 23: All Sec 25: Lots 1-4, W2E2, W2 Sec 26: All	1,920.48	04/04/2006	\$105,655.00	07/01/2006	Suspension 09/21/2006	Stanley Energy Inc.
WYW172856 T 35 N, R 114 W Sec 33: All	640.00	04/04/2006	\$35,200.00	07/01/2006	Suspension 09/21/2006	Stanley Energy Inc.
WYW172857 T 35 N, R 114 W Sec 34: All Sec 35: All Sec 36: Lots 1-4, W2E2, W2	1,920.04	04/04/2006	\$105,655.00	07/01/2006	Suspension 09/21/2006	Stanley Energy Inc.

Table 3. Leases pending authorization

BLM Serial Number Legal Land Description	Acreage	Sale Date	Bid Amount	Status of Lease	Lessees of Record
WYW173035 T 33 N, R 114 W Sec 8: All; Sec 9: S2	960.00	06/06/2006	\$4,800.00	Pending	Kirkwood Oil & Gas LLC
WYW173036 T 33 N, R 114 W Sec 16: All; Sec 17: All	1,280.00	06/06/2006	\$24,320.00	Pending	Samuel Butler III
WYW173037 T 34 N, R 114 W Sec 4: Lots 1, 2, S2NE, SE	319.64	06/06/2006	\$20,800.00	Pending	Stanley Energy Inc.
WYW173038 T 34 N, R 114 W Sec 7: SE; Sec 8: SW	320.00	06/06/2006	\$75,200.00	Pending	Stanley Energy Inc.
WYW173039 T 34 N, R 114 W Sec 8: SE Sec 9: All; Sec 12: All	1,440.00	06/06/2006	\$338,400.00	Pending	Stanley Energy Inc.
WYW173040 T 34 N, R 114 W Sec 10: All; Sec 11: All	1,280.00	06/06/2006	\$294,400.00	Pending	Stanley Energy Inc.
WYW173041 T 34 N, R 114 W Sec 16: N2N2; Sec 17: N2NE	240.00	06/06/2006	\$49,200.00	Pending	Stanley Energy Inc.
WYW173044 T 32 N, R 115 W Sec 33: Lots 1-4, N2, N2S2 Sec 34: Lots 1-4, N2, N2S2	1,268.18	06/06/2006	\$20,304.00	Pending	Kirk D. Martinez
WYW173045 T 33 N, R 115 W Sec 9: All; Sec 10: All	1,280.00	06/06/2006	\$24,320.00	Pending	Stanley Energy Inc.
WYW173046 T 33 N, R 115 W Sec 11: All	640.00	06/06/2006	\$12,160.00	Pending	Stanley Energy Inc.
WYW173266 Γ 34 N, R 113 W Sec 5: SW	160.00	08/01/2006	\$4,640.00	Pending	Contex Energy Co.

BLM Serial Number Legal Land Description	Acreage	Sale Date	Bid Amount	Status of Lease	Lessees of Record
WYW173267 T 34 N, R 113 W Sec 6: Lots 3-7, SENW, E2SW, SE Sec 7: Lots 1-4, E2, E2W2 Sec 8: All	1,715.47	08/01/2006	\$49,764.00	Pending	Contex Energy Co.
WYW173274 T 36 N, R 114 W Sec 33: S2; Sec 34: S2 Sec 35: S2; Sec 36: All	1,600.00	08/01/2006	\$640,000.00	Pending	Hanson & Strahn Inc.
WYW173278 T 28 N, R 115 W Sec 17: All	640.00	08/01/2006	\$7,040.00	Pending	Contex Energy Co.
WYW173279 T 29 N, R 115 W Sec 4: All; Sec 9: All Sec 17: All	1,920.00	08/01/2006	\$7,680.00	Pending	Wold Oil Properties Inc.
WYW173280 T 29 N, R 115 W Sec 18: Lots 2-4, S2NE, SENW, E2SW, SE Sec 19: Lots 1-4, E2, E2W2 Sec 20: W2; Sec 29: All	1,947.27	08/01/2006	\$11,688.00	Pending	Wold Oil Properties Inc.
WYW173281 T 33 N, R 115 W Sec 14: All; Sec 23: All Sec 24: SW	1,440.00	08/01/2006	\$34,560.00	Pending	Contex Energy Co.
WYW173282 T 33 N, R 115 W Sec 24: W2SE	80.00	08/01/2006	\$2,000.00	Pending	Contex Energy Co.
	18,530.56		\$1,621,276.00		

### Appendix E: Actions Relevant to Cumulative Effects Analysis

Past, present and reasonably foreseeable future projects were considered in the analysis of cumulative effects for this project (see table 4 and table 5 below, and figure 11 in volume 1). Available information considered included forest databases regarding fire history and vegetation management projects, and information from State and BLM field offices.

Table 4. Past disturbance activities

Activity, year	Description of disturbance	Effects
Grazing allotments	Livestock grazing on 247,929 acres Cattle active on 187,082 acres Forage reserve = 59,670 acres Cow camps, water source use, fence	Use of roads, removal of vegetation per utilization guidelines.
Developed and dispersed recreation	maintenance.  Road-oriented uses such as firewood gathering, roadside camping and dayuse, off-highway vehicle use on open routes, hunting, and winter sports. Use of closed roads for semi-primitive forms of recreation such as horseback riding and hiking.  Recreation outfitter and guide activities.	Use of roads and trails in summer and winter, removal of dead wood.
Fontenelle Fire 2012	Located in Snider Basin High severity fire, burned approximately 64,220 acres in the southern Wyoming Range (75% of the fire burned on NFS, 19% burned on BLM, 1% on state, 5% on private lands). Rehabilitation actions included:  On NFS lands, 28 miles of firelines were waterbarred and 3 miles of fireline seeded.  On BLM lands, a total 1.5 miles of handline were rehabilitated and 3.5 miles of dozer line were rehabilitated and seeded.	Burn included approximately 4,640 acres, or 11.7% of the lands under review for leasing. High forest mortality, stand-replacing fire effects.
Maki Vegetation Project 2005-2008	3 miles temporaryroad. 2,300 acres aspen restoration 273 acres conifer treatment – Timber sale is cut/sold all timber harvesting is complete for Maki	Effects to lynx habitat within Cottonwood Creek Lynx Analysis Unit (LAU). About 830 acres would be burned and converted to unsuitable lynx habitat
Halverson Timber Sale 2008-2012	165 acres regeneration harvest and salvage All harvesting/timber removal is competed— Sale is closed	Located in the Cottonwood Creek LAU About 165 acres converted to unsuitable lynx habitat
South Cottonwood Timber Sale 2008-2013	200 acres regeneration harvest and salvage  – Timber sale is closed – All timber/wood products have been removed.	Located in the Cottonwood Creek LAU About 200 acres converted to unsuitable lynx habitat
Recreation, hunting	Use of the area for hiking; use of area roads for motorized recreation and access for hunting, fishing and dispersed camping. Snow machine use in the area during winter months.	Localized temporary disturbance from recreation activities. Use of roads and trails.

LAU = lynx analysis unit; NFS = National Forest System; BLM = Bureau of Land Management;

Table 5. Present, ongoing, and foreseeable projects

Project name/Type	Description of action	Effects
Cottonwood II Vegetation Management Project, 2007-present	1 mile relocation; 1 mile reconstruction; 13.8 miles temporary road. 2,099 acres The record of decision was signed in 2007 for the Cottonwood II EIS.	Effects to lynx habitat within Cottonwood Creek Lynx analysis Unit (LAU). About 1,060 acres converted to unsuitable lynx habitat.
Bare Creek Fish Barrier Improvement, 2015	Replace culvert on Road 10050 to restore a failing fish barrier. (Included in the 2007 Cottonwood II Project.) Completed 2015.	Ground disturbance in immediate area to restore a failing fish barrier.
LaBarge Vegetation Restoration Project, 2015-2020	3 miles temporaryroad 2,700 acres mechanical treatment; salvage (bug killed conifer) and thinning (conifer) to restore aspen 959 acres fire to restore aspen 103 acres clearcut	Located in the LaBarge LAU About 1,000 acres converted to unsuitable lynx habitat Portions of this project burned in the Fontenelle Wildfire – this project is currently being reevaluated, and the proposed action revised to incorporate new units.
Bare Mt. Postand Pole 1, 2 and 3, 2008-present	0.3 mile temporaryroad 109 acres thinning Bare Mt. 1 – activities completed 2015; Bare Mt. 2 – harvest completed 2015, pile burning in 2015-2016; Bare Mt. 3 – harvest anticipated through 2017; pile burning anticipated 2017-2018.	Located in the Cottonwood Creek LAU.
Nylander Timber Sale, 2012-2021	144 acres regeneration harvest and sanitation – Timber sale is active – Sale anticipated to close in 2016. Brush disposal and KV activities anticipated through 2021.	Located in the Cottonwood Creek LAU. About 144 acres converted to unsuitable lynx habitat.
Klienstick Timber Sale, 2012-2021	3 miles temporaryroad 116 acres regeneration harvest and sanitation - Timber sale is active – Sale anticipated to close in 2016. Brush disposal and KV activities until 2021.	Located in the Cottonwood Creek LAU. About 116 acres converted to unsuitable lynx habitat.
Cottonwood Aspen Rx Burn, 2008-present	1,058 acres prescribed burn.	Located in the Cottonwood Creek LAU. About 1.058 acres converted to unsuitable lynx habitat.
Monument Ridge Burn, 2005-present	4,125 acres prescribed burn (125 acres timber, 4,000 acres sagebrush).	Located in the Upper Hoback South LAU. About 125 acres converted to unsuitable lynx habitat.
Fontenelle Fire Salvage, 2014-2018	3 miles temporaryroad 466 acres of fire killed timber harvesting. Multiple timber sales are active in the area – Sales will be active thru 2018.	Located in the Birch-South Beaver and South Beaver LAUs. Will affect up to 466 acres of fire-killed timber through mechanical harvesting. No lynx habitat will be affected.
Middle Piney Dam, 2017	Reconstruction of the dam, and reconstruction of dam access road.	Localized disturbance during reconstruction activities along access road and dam.
Old Indian Trail Maki Creek Crossing Project, 2016	Construct a small trail puncheon across Maki Creek on the Old Indian Trail.	Small-scale effects to streambanks in the immediate vicinity of the stream crossing.

Project name/Type	Description of action	Effects
South Cottonwood Creek Road and Trailhead Flood Damage Restoration, 2017	Add stream and floodplain roughness and relocate South Cottonwood Creek Trailhead.	Localized disturbance in stream and floodplain.
North Horse Creek Riparian Restoration, 2017	Remove road fill and culverts from the end of Road 10389.	Short-term small-scale effects in the immediate vicinity of the culverts during removal activities. Long-term improvement to restore stream and floodplain function; short-term increased bedload mobility and localized incision of North Horse Creek.
Shafer Creek and LaBarge Creek Fish Passage Culvert Replacement, 2015-2016	Replace two culverts in the LaBarge Creek watershed.	Short-term small-scale effects in the immediate vicinity of the culverts during replacement. Long-term improvement of fish passage connectivity.
Grazing allotments, ongoing	Livestock grazing 247,929 acres Cattle active 187,082 acres Forage reserve 59,670 acres Cow camps, water source use and development, fence maintenance.	Use of roads, removal of vegetation per utilization guidelines.
Developed and dispersed recreation, ongoing	Road-oriented uses such as firewood gathering, roadside camping and dayuse, off-highway vehicle use on open routes, hunting and winter sports. Use of closed roads for semi-primitive forms of recreation such as horseback riding and hiking. Outfitter guide use.	Use of roads and trails in summer and winter, removal of dead wood.
LaBarge Platform Exploration and Development (Development in Progress)	Drill, complete, produce, and eventually reclaim up to 31 new oil and gas wells on an estimated 18 new well pads. Estimated total short term surface disturbance would be up to 120 acres and total long term surface disturbance would be up to 50 acres. Project lifespan would be 40 to 50 years.	Exact placement of infrastructure is currently unknown; however, it appears that the direct disturbance would primarilytake place in Wyoming big sagebrush habitat. Only a portion of this project occurs within BLM shared LAUs – no portion of the project occurs within NFS LAUs.
Rand's Butte Sour Gas Project (Denbury) (Development in Progress)	Development of injection wells for hydrogen sulfide, carbon dioxide, natural gas, and helium with ancillary facilities. Surface disturbance would total up to 872 acres over the short term and 54.6 acres over the long term (project life of 40 years).	The primary direct impact would be disturbance to 496.9 acres of Wyoming big sagebrush habitat, but a variety of other habitats would be impacted to a lesser degree (including aspen, grassland, and other shrub land types). Project occurs within portions of the Birch-South Beaver BLM shared LAU.
Riley Ridge Natural Gas Project (Development in Progress, projects include: Lake Ridge, Fogerty)	Drill up to 238 natural gas wells on 159,928 acres of leases held by ExxonMobil on NFS and BLM lands. As of 2005, 26 wells have been approved and drilled (9 of which were drilled on NFS lands). The approval to construct a new pad and drill additional wells on NFS lands in the Birch-South Beaver LAU is currently being planned.	These leases occur within sage-brush, aspen and conifer forest habitat types on BLM and FS lands; 28,971 and 26,719 lease acres occur on NFS and BLM lands respectively, and within the LaBarge and Birch-South Beaver LAUs. Existing wells have impacted some lynx habitat acres, but impacted acreages are not currently available.

Project name/Type	Description of action	Effects
True Oil Lander Peak Exploration and Development Project (In planning stage, projects include: Soda)	Drill one exploratory well per pad on two well pads (one existing and one previously reclaimed) and a water supply well would be drilled on a third existing well pad on NFS lands on existing leases located about 22 miles northwest of Big Piney in Sublette County, Wyoming.	Potential to affect mountain big sagebrush, lodgepole pine forest, and spruce/subalpine fir forest; 5.88 acres within lynx habitat would be impacted. Increased vehicle traffic along areas roads during operations. Located within the South Beaver LAU on NFS lands. Thirty-three acres of the Project Area is on the South Beaver LAU and no disturbance in this LAU. All existing pads, roads and proposed disturbance is in the Cottonwood Creek LAU.
Dry Piney Deep Development Project	Proposed gas development project, which would include 10 gas production wells with associated access roads and buried gathering pipelines; a gas processing plant, 7.6 miles of methane pipeline, 8.3 miles of CO <sub>2</sub> pipeline, four CO <sub>2</sub> -injection wells, 13 miles of an overhead, 230-kilovolt (kV) electric transmission line, a 230/34.5 kV substation, one water-supplywell, one produced-water disposal well and one sour-gas disposal well. The proposed facilities and supporting features would be constructed on a mix of public, state and private land, with the majority of the 355 acre gas processing plant facilities on private QEP owned land in the Dry Piney Creek area, approximately 10 miles northwest of LaBarge, Wyoming.	Employment, income, government revenue, housing, traffic, crime, disproportionate effects on low income families, ecosystem service.

LAU = lynx analysis unit; NFS = National Forest System; BLM = Bureau of Land Management; KV = Knutson-Vandenberg funded activities; EIS = environmental impact statement

### Appendix F: Socio-economic Analysis Information



### ECOSYSTEM SERVICES OF THE WYOMING RANGE A BRIEFING PAPER AND SURVEY

### FOR THE 2015 OIL AND GAS LEASING SUPPLEMENTARY ENVIRONMENTAL IMPACT STATEMENT SOCIO-ECONOMIC SPECIALIST REPORT

Prepared for:

Commissioner Joel Bousman and Bridger-Teton National Forest Line Officers and Specialists

May 2015

Ecosystem Research Group 121 Hickory Street Missoula, MT 59801 Phone: (406) 721-9420

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#### 1. INTRODUCTION TO ECOSYSTEM SERVICES OF THE PROJECT AREA

This briefing paper is meant to 1) give the reader an understanding of the ecosystem service framework and 2) provide information about the existing condition of these ecosystem services within the proposed Wyoming Range Oil and Gas project area. After reading the briefing paper, the reader should be prepared to fill out the survey (next section). Any questions about ecosystem services, this briefing paper, or the survey may be addressed to: Ben Irey, Social Scientist with Ecosystem Research Group (ERG), birey@ecosystemrg.com, O: 406-721-9420, C: 406-546-3329.

The project area likely produces a suite of ecosystem services that benefit the local, regional, and national population. Ecosystem services are defined here as those goods and services that are produced by ecosystems and valued by society. These may include species habitat, forage and timber production, regulation of the quantity, quality, and timing of water, opportunities for recreation, and opportunities to enjoy scenery.

The 2014 Project Initiation Letter (PIL) included the following comment identified during scoping, which elucidates the need to assess the ecosystem services of the project area, "Potential impacts from post-leasing exploration and/or development could have cumulative effects on the social and economic well-being of the local communities and quality of life for residents". Understanding something about how ecosystem services are produced within the project area and how development affects these ecosystem services is important to ensuring that the natural capital of the project area is protected and these kinds of goods and services continue to be produced for the betterment of the local, regional, and national population.

National Forest management is directed by mandates from legislation and policy, including the Final Planning Rule of 2012 (FPR), the National Forest Management Act of 1976 (NFMA), the National Environmental Policy Act of 1969 (NEPA), and Multiple-Use Sustained-Yield Act of 1960 (MUSYA). The mandates include, respectively, that the Forest Service must: provide for ecological sustainability and contribute to social and economic sustainability; comprehensively assess present and anticipated use, demand, and supply of benefits coming from public and private forests; compare the benefits and costs and the tradeoffs associated with various management alternatives; and coordinate and consider the multiple uses of National Forest lands to best meet the needs of society.

Part of the utility of an ecosystem service assessment for supporting FPR, NEPA, NFMA, and MUSYA requirements includes providing information about the full-range of ecosystem services valued by society, which can inform rational natural resource allocation, tradeoff, and utilization decisions and contribute to ecological, social, and economic sustainability.

According to the Forest Services' ecosystem service website, "when our forests are undervalued they are increasingly susceptible to development pressures and conversion. Recognizing forest ecosystems as

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natural assets with economic and social value can help promote conservation and more responsible decision-making".

#### 1.1 Using the briefing paper

This ecosystem services briefing paper and survey were created to assess the importance of ecosystem services produced within the project area. The ecosystem service framework from the USFS Region 1 ecosystem service assessment and mapping project was adapted for this assessment, including the names of the ecosystem services and their descriptions. The broad categories of ecosystem services (provisioning, regulating, habitat, cultural) were adapted from the Millennium Ecosystem Assessment. PIL issues were sorted by ecosystem service based on their relevance. The direct beneficiaries of each ecosystem service were assessed by ERG's Social Scientist. The value information for each ecosystem services was created by searching for keywords in the Affected Environment Chapter of the 2011 Oil and Gas Leasing in the Wyoming Range FSEIS. Statements relevant to an ecosystem service were then sorted by service. Value information statements from the FSEIS for an ecosystem service are followed by page numbers (in parentheses). If a sentence does not end with a page number in parentheses, the next page number after that sentence applies. Driver information (drivers are defined here as those things that affect change in the production or receipt of ecosystem services) was also derived through a keyword search of the FSEIS. The keyword(s) used to develop the value and driver information are listed at the end of each ecosystem service subsection. The information contained in the briefing paper should be used to help inform your answers to the questions in the survey (next section).

Duke University's Nicholas Institute for Environmental Policy Solutions has recently released a Federal Resource Management and Ecosystem Services Guidebook, which provides a framework and methodology for assessing ecosystem services as part of federal land management and planning efforts. This guidebook, like most ecosystem service literature, calls for taking a comprehensive look at ecosystem services affected by planning and management. We have tried to do the same here. Therefore, some ecosystem services may seem irrelevant or unimportant to the project area. This is an artifact of our effort to analyze the full-range of ecosystem service. With your survey, we will be able to remove irrelevant or unimportant ecosystem services from the table and focus the rest of our analysis on the most important ecosystem services.

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#### 2. ECOSYSTEM SERVICES SURVEY

**Instructions:** Please answer the following questions after reviewing the Ecosystem Services Briefing Paper. Reference the Table of Contents to answer the following two questions. Please use a pencil and write clearly. Upon completing this survey, please mail, fax, or scan and email this page to ERG (contact information on cover page).

**Question 1:** Rank the following ecosystem services from most important (+3) to most unimportant (-3) to society by writing in the decimal number (2.1, 3.1, 4.2, 5.3, etc.) of the ecosystem service from the Table of Contents into the space provided. Use each of the twenty-two decimal numbers from the Table of Contents only once. Please ensure that each space is filled with a decimal number. Please review your answer and make any changes before moving on.

Most important	(+3)
	(+2)
	(+1)
Not Important	(0)
	(-1)
	(-2)
Most Unimportant	(-3)

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**Question 2:** Rank the following ecosystem services from likely to be most positively affected by oil and gas development (+3) to likely to be most negatively affected by oil and gas development (-3) by writing in the decimal number (2.1, 3.1, 4.2, 5.3, etc.) of the ecosystem service from the Table of Contents into the space provided. Use each of the twenty-two decimal numbers only once. Please ensure that each space is filled with a decimal number. Please review your answer and make any changes before moving on.

Likely to be most positively affected	(+3)
	(+2)
	(+1)
Likely to not be affected	(0)
	(-1)
	(-2)
Likely to be most negatively affected	(-3)

# 1. PROVISIONING SERVICES – PRODUCTS PRODUCED WITHIN THE PROJECT AREA

#### 1.1 Fresh water

1) In-stream use of water for recreational navigation, 2) in-stream use of water for industrial navigation, in-stream use of water for hydropower production, 4) out-of-stream use of water for domestic and municipal use, 5) out-of-stream use of water for agricultural production, 6) out-of-stream use of water for industrial production, 7) tribal use of water under treaty rights, 8) water for aquatic and riparian ecosystems.

#### Relevant PIL scoping issues –

- Potential impacts from post-leasing exploration and/or development could affect groundwater quality and quantity in the area.
- Potential impacts from post-leasing exploration and/or development could occur to water quality and could affect habitat for fish and other special status aquatic species.

**Direct beneficiaries** – Tribes, recreationists, hydro-power producers, domestic and municipal water users, irrigators, industrial water users, species using aquatic and riparian ecosystems

**Value information from Affected Environment Chapter -** Water from the Wyoming Range has long supported ranches and towns (3-24).

**Driver information** – Potential effects from post leasing exploration and or development could occur to ground water of the area. Concerns have been expressed about aquifer contamination and ground water depletion by drilling (4-50). Potential effects to ground water quality are those resulting from withdrawals of ground water for drilling purposes from the Wasatch Formation aguifer and include lowering water levels in aquifers used by domestic and stock wells, requiring replacement or deepening those wells and depletion of ground water discharge to surface waters resulting in reductions in stream base flows and spring flows (4-51). Ground water quality could be impacted by leaky well seals allowing cross-aquifer contamination. Flow (leakage) among aquifers having differing water quality could also occur where aquifer zones in an oil and gas production well or water well are not isolated during well completion or are inadequately plugged during well abandonment. The potential exists for effects to ground water quality from accidental spills during the construction phase (4-55). Alternative 2 would have the greatest potential impact on ground water resources. Alternative 3 reduces the ground water impact potential because the projected number of wells is 20 and it adds stipulations that set a minimum distance (500 feet) for drilling near wetlands, streams, and riparian areas, some of which may be supported by shallow ground water discharge. Alternatives 2 Reduced and 3 Reduced have even less potential for impacts to groundwater resources because the projected number of wells is 11 and 8 respectively. Alternative 3 Reduced also includes the added stipulations described above for Alternative 3. Alternative 4 has the least potential for effects to ground water of the action alternatives because the projected number of wells is 6.

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Wells would be drilled only from existing producing leases under this alternative (4-56). Cumulative effects to ground water could affect residential and livestock wells (4-57).

**Keyword search** – Water

#### 1.2 **BUILDING MATERIALS**

Wood products, poles

Relevant PIL scoping issues – none

**Direct beneficiaries** – Wood products and processing industry, farm, ranch, and domestic users

**Value information from Affected Environment Chapter -** The wood products and processing industry is one of the most affected industries by the management of National Forests and accounts for a very small percentage of total employment in the project area (3-17).

Driver information - none Keyword

search - Wood, timber

### 1.3 ORNAMENTAL MATERIALS

Christmas trees, decorative materials, antlers, taxidermy

Relevant PIL scoping issues – none

**Direct beneficiaries** – Tribes, households, sportsmen

Value information from Affected Environment Chapter – none

**Driver information** – none

Keyword search - Tree, antler

#### 1.4 FORAGE

Forage for humans including mushrooms and berries, forage for livestock, forage for other mammals, birds, and insects

## Relevant PIL scoping issues –

 Potential impacts from post-leasing exploration and/or development could affect permitted livestock grazing.

• Potential impacts from post-leasing exploration and/or development could affect large game and trophy game species.

**Direct beneficiaries** – Herbivores including elk, livestock, mule deer, and sage-grouse, omnivores including grizzly bears, black bears, berry pickers, and mushroom pickers

Value information from Affected Environment Chapter – The diet of elk varies seasonally depending on availability of forage. In the winter, they feed on grasses and forbs, during the spring they focus primarily on grasses and then switch to forbs. Deciduous shrubs are used year round (3-100). Grizzly bears eat a variety of roots, berries, seeds, and plants, especially whitebark seeds. Martens sometimes feed on fruits and nuts (3-110). Sage-grouse forage includes forbs, sage, and succulent vegetation. Mule deer are primarily browsers and will eat all exposed portions of woody plants. In the spring, grasses and forbs comprise the bulk of their diet (3-106). Moose typically feed on willow during the winter and aquatic vegetation in the summer (3-109). Northern three-toed woodpeckers consume berries (3-116). A variety of birds feed on seeds and vegetation (3-68). Livestock have grazed the Wyoming Range for over a century (3-24).

**Driver information** – Depending on the rate of forage loss, elk herd sizes could decrease over time and dependency on elk feed grounds could increase (4-127). There will be irretrievable loss of wildlife habitats and grazing forage during drilling that will last until the facilities are closed and the disturbed areas reclaimed. The degree of loss would vary by alternative with the number and size of pads and length and location of roads (4-203).

Keyword search - Forage, fruit, nut, grass, forbs, berries, seed, browse, graze, mushroom, shrub

### 1.5 **ANIMAL PROTEIN**

Mammal, bird, insect, arachnid, amphibian, reptile, fish, and crustacean protein

### Relevant PIL scoping issues -

• Potential impacts from post-leasing exploration and/or development could affect large game and trophy game species.

**Direct beneficiaries** – Tribes, hunters, livestock producers, outfitters and guides, insectivores including sage grouse, predators including lynx, wolves and birds of prey, scavengers

Value information from Affected Environment Chapter – Industries most affected by Forest management include fishing and hunting (3-17). Grazing accounted for .5% of total employment in Sublette County, but supported 1% of total income. Jobs in agriculture (not including livestock grazing) forestry, fishing, and hunting account for 6.1% of total jobs, making it the sixth largest employing sector in the economy yet it supports just 1.7% of the total labor income. Individuals in this sector of the industry may be migrating out of the area in search of higher paying jobs or areas with a lower cost of

living, or may be taking up mining jobs locally (3-17 and 3-19). BTNF directly supports about 33% of the jobs and income generated by elk hunting in the region, however, because 76% of the elk migration corridors are on the BTNF, its overall role in supporting elk hunting is probably significantly greater (3-34). Snowshoe hares are the primary prey species for lynx and the distribution of lynx coincides closely with that of snowshoe hares. Red squirrels are considered an important alternate prey species for lynx (3-70). Preferred wolf prey includes deer, elk, and moose. An excellent prey base exists in the project area for wolves (3-89). Grizzly bears in the Greater Yellowstone Ecosystem eat cutworm moths, carrion, fish, and sometimes elk or moose calves or other smaller mammals (3-93). Martens primarily prey on voles and mice and occasionally insects (3-110). Northern goshawk prey primarily includes grouse, hares, and red squirrels (3-115). Boreal owl populations appear to be limited locally partially by abundance and availability of prey (3-117). Fish and waterfowl comprise the majority of bald eagle diet however carrion and small mammals may supplement their diet when primary prey sources are not available, especially in winter (3-123). Wolverines are predators as well as scavengers (3-120). Spotted bats are believed to forage primarily on noctuid moths and occasionally beetles (3-119). Peregrine falcons prey on waterfowl (3-122). Sage-grouse feed on insects (3-113). Northern three-toed woodpeckers consume insects (3-116). A variety of bird species feed on insects (3-68).

**Driver information** – With Alternative 2, there is the potential to displace game and decrease hunting opportunities in the North Mountain Roadless Area (4-33). Oil and gas activities could affect structural components within the boreal forest (primary constituent element) that may reduce the ability of those areas to support snowshoe hare, the primary prey species of lynx (4-69). Alternative 2 could have a negative impact on wolf prey populations (4-70). Prey base and foraging habitat quality for raptors are likely to decline as a result of oil and gas exploration activities (4-81). Sediment can reduce the abundance of invertebrate prey for fish and amphibians (4-136).

Keyword search - Hunt, prey, predator, forage

#### 1.6 **FUEL**

Firewood, biofuels

Relevant PIL scoping issues – none

**Direct beneficiaries** – Firewood gatherers, campers

**Value information from the Affected Environment Chapter** – none

**Driver information** – none

**Keyword search** – Fuelwood, firewood

#### 1.7 **MEDICINAL MATERIALS**

Plant and animal materials for synthesis and use as medicine

Relevant PIL scoping issues – none

**Direct beneficiaries** – Tribes, wildcrafters

Value Information from Affected Environment Chapter – none

**Driver information** – none

**Keyword search** – Medicinal, medicine

### 1.8 PLANT VARIETIES FOR REVEGETATION

Endemic plant varieties can be bred and transplanted for revegetation efforts

Relevant PIL scoping issues – none

**Direct beneficiaries** – Ecosystems in need of restoration, restoration companies

**Value Information from Affected Environment Chapter – none** 

**Driver information** – none

Keyword search - Medicinal, medicine

#### 1.9 **PLANT GENETICS**

Plant genetic materials such as seeds, pollen, scion

Relevant PIL scoping issues - none

**Direct beneficiaries** – Whitebark forests

Value information from Affected Environment Chapter – none

**Driver information** – Whitebark pine is not expected to be adversely affected by any alternative (4-33).

**Keyword search** – Seed, pollen, scion, whitebark, gene

# 2. HABITAT SERVICES – THE PROJECT AREA PROVIDES HABITAT FOR A WIDE VARIETY OF SPECIES

#### 2.1 SPECIES HABITAT

Providing breeding, rearing, feeding, and migrating habitat for species

### Relevant PIL scoping issues –

- Potential impacts from post-leasing exploration and/or development could occur to terrestrial
  wildlife including threatened, endangered, sensitive, management indicator species' habitats
  and populations, large game, and trophy game species.
- Potential impacts from post-leasing exploration and/or development could occur to rare plant species habitats including sensitive and management indicator species' habitats and populations.
- Potential impacts from post-leasing exploration and/or development could occur to water quality and could affect habitat for fish and other special status aquatic species.

**Direct beneficiaries** – Native and desirable species

### Value information from Affected Environment Chapter –

General habitat conditions - Six terrestrial management indicator species are present in the project area, including elk, mule deer, moose, pronghorn, bighorn, and marten (3-96). The project area is outside of crucial winter range, but does provide parturition (birthing) habitat and spring/summer/transition range, especially for elk, mule deer, and moose (3-97). Roads cause direct loss of habitat and also contribute to habitat fragmentation and edge habitats. This decreases habitat effectiveness or even renders habitats adjacent to roads as unsuitable for many species. In addition to the deleterious effects on habitat, roads interrupt migration and movement patterns, increase human/wildlife contacts and conflicts, cause disturbance and displacement, increase vulnerability of wildlife to poaching and can lead to direct mortality through collisions (3-64).

Mammals – The North Mountain area contains some crucial winter range for bighorn sheep (3-44). For energy development sites, remote monitoring should be encouraged to reduce snow compaction, which provides travel corridors for lynx's competing predators (3-76). The Wyoming Range has the longest and most consistent lynx occupancy in the state (3-77). The Wyoming Range is unique and indicative of the boreal forest habitat required by lynx. Although few data are available, researchers believe that lynx in the Greater Yellowstone Ecosystem (GYE) have a patchy distribution and the Wyoming Range may represent some of the most important lynx habitat in this ecosystem (3-77). The project area is within designated critical habitat for lynx (3-86). Lynx winter and denning habitat makes up less than 12% of the GYE, the project area is included in this 12% (3-88). Mule deer occupy plains and prairies, shrublands, woodlands, and mountain forests. They prefer rough breaks at elevations near or at the subalpine zone in the mountains but can also be found in the alpine, montane, and foothill zones. Mule deer seek refuge at

lower elevations when snow pack is deep (3-106). The project area is primarily mule deer spring/summer/transition habitat. Mule deer also migrate through and around the project area going to and from winter range (3-106). Moose use a variety of habitats from dense coniferous, deciduous, or mixed forests to shrublands, open meadows, grasslands, and riparian areas. In the GYE, moose typically move to willow dominated riparian areas below 7,000 feet during the winter. During summer months, moose feed extensively in wetland and riparian areas and on aquatic vegetation. They require cover throughout the vear and typically will not use large, open areas with little screening vegetation. Moose are somewhat less immobilized by deep snow than elk or mule deer. Pronghorn utilize sagebrush and grasslands. They are typically found in wide open areas where their vision is unrestricted. Only a small portion of the lower elevation habitat on the BTNF is considered suitable for antelope (3-109). Marten are most likely to occur within mature/old growth, spruce/fir forests in the project area (3-110). Elevation and snow pack may limit the potential for fisher in the project area (3-121). Open roads essentially reduce the amount of habitat used and available to elk (3-100). The project area provides parturition/summer habitat and transition habitat for elk, which is used during the spring and late fall for migration (3-104). Wolf habitat is present in the project area, including an excellent prey base of elk, mule deer, and other ungulates. The amount and location of roads can impact wolf habitat use (3-89). Habitat in the project area is not typically frequented by grizzly bears and has limited value as habitat (3-94).

Aquatic species - LaBarge Creek Management Area includes important waters for Colorado cutthroat trout (CRCT) (3-48). CRCT require cool, well-oxygenated water and undergo seasonal migrations triggered by water temperature (3-129). CRCT have declined in the BTNF for reasons including reduced watershed function and aquatic habitat degradation (3-130). Cutthroat trout have been adversely affected by reduced watershed function and habitat degradation from dams, water diversions, road networks, timber harvest, permitted livestock grazing, private and public developments on floodplains, developed and dispersed recreation in riparian areas, and recreational angling (3-130). Four endangered fishes (humpback chub, bonytail, Colorado pikeminnow, and razorback sucker) are present in the lower Green and Colorado rivers and could potentially be affected by oil and gas development and consequent depletion of water from the Upper Green River (3-129). Columbia spotted frogs inhabit riparian areas with permanent water and over-winter in oxygenated waters. Drought is a threat to frogs and their habitat and may be exacerbated by management activities and land uses. Frogs are vulnerable to water-bome chemical toxins, which they absorb through their moist skin (3-130).

Birds - Migratory birds use a variety of habitats in the project area during the breeding season (3-67). The Wyoming Bird Conservation Plan identifies priority species within the state of Wyoming. A number of these birds are known to use habitat within the project area, a high percentage use the area for breeding (3-67). Brewer's sparrow (an indicator species) is likely a common summer resident in the project area where suitable sagebrush habitat is present (3-111). Sensitive terrestrial habitat species within the project area include greater-sage grouse, northern goshawk, three-toed woodpecker, great grey owl, and boreal owl (3-112). The project area is most likely used for greater sage-grouse brood rearing however; it is plausible that some nesting could be occurring in immediately adjacent areas or even in habitat within the

project area, particularly on the north/northeastern edge (3-115). Based on general cover type, there is an estimated 25,000 acres of potential habitat for goshawks in the project area (3-116). Based on general cover type data of the project area, there is an estimated 19,000 acres of lodgepole pine mix that may be suitable nesting and foraging habitat for three-toed woodpeckers (3-116). Based on general cover type data for the project area, there is an estimated 31,000 acres of potential habitat for great grey owls in the project area. Based on general cover type data, there is an estimated 29,000 acres of potential habitat for boreal owls in the project area (3-117).

Plants - Greenland primrose habitat is threatened by disturbance of wetland habitats by livestock or recreational users (3-146).

#### **Driver information –**

General habitat considerations - Activities on adjacent lands that may affect streams and watersheds include vegetation management, fuel treatments, rangeland management, oil and gas development, residential and commercial areas, road construction and maintenance, and recreational activities. Natural events, such as wildland fires, would also have a cumulative effect on streams and watersheds. Although best management practices and design criteria would not apply to wildland fires, burned area recovery plans would be developed to rehabilitate affected areas (4-141). Potential adverse effects on watershed resources and aquatic habitats include accelerated erosion, increased stream sedimentation, decreased water quality, potential chemical contamination, altered stream flows, channel degradation, and long-term loss of vegetation productivity (4-203). Minor effects on watershed, water, and soil resources, including increased erosion are probably unavoidable under all action alternatives (4-204).

Mammals - Alternative 2 is unlikely to affect Forest-wide population trends of elk, moose, and mule deer (4-77). Alternative 2 has the highest potential for incremental adverse cumulative effects to lynx (4-112). Alternative 2 would likely result in adverse effects to lynx individually and/or to lynx habitat, including designated critical habitat. The recent documentation of lynx in the area, abundant snowshoe hares, and record of past denning activity make it likely that individual lynx would be exposed to effects associated with the proposed leasing. The overall amount of habitat that is predicted to potentially be affected is relatively small, however; effects may extend out from the direct footprint of the project activities and the leases are within and adjacent to undeniably important lynx habitat that appears to be limited. Based on findings that lynx have and continue to be poached, typically from open roads, the increased roading increases the risk for mortality. Although roads would be closed to the public, they would need to remain open for industry use and would be on the landscape and in use for decades when associated with a producing well (4-69). Connected actions associated with the proposed leasing in the 44,720-acre project area may potentially add incrementally to the past, present and foreseeable large-scale projects in the cumulative effects area. Producing leases, mostly in the southern portion of this area have most assuredly reduced available lynx habitat and rendered the development area and immediately adjacent habitats as unavailable for lynx occupation because of the existing wells, road system, and human activity. Lynx passing through would also be at increased risk of mortality due to roads (4-113). Because of the potential

for new roads and reconstruction of existing roads and to a lesser extent, loss of habitat and disturbance, Alternative 2 has the potential to negatively impact wolf prey species (4-71).

Aquatic species - Aquatic species have been impacted by water diversion and dams (3-130 and 133). Data shows long term significant decreases in acid neutralizing capacity and increases in nitrogen and sulfur deposition project area lakes and streams. Much of these changes occurred in the years since natural gas development began in the Pinedale area. When freshwater fish eggs are subjected to acid stress, the duration of the hatching process may take many days longer than normal hatch, in addition, larval mortality increases, and fish become more susceptible to other environmental stresses. Low environmental pH alone is not acutely toxic to adult salmonids, but acidification in combination with aluminum in soft water is a threat to all aquatic organisms. Amphibians are particularly vulnerable to atmospheric deposition, increased acidity, and mobilization of metals from the soils. Acidification increases egg and embryo mortality, although susceptibility varies between species and with pH and soil chemistry (4-138). Effects on stream health and watershed conditions resulting from livestock grazing, poor drainage on existing roads and trails, and natural hill slope instability would continue.

**Keyword search** – Habitat, migrate, migrating, parturition, feeding, calving

# 3. REGULATING SERVICES – BENEFITS OBTAINED FROM THE NATURAL REGULATION OF ECOSYSTEM PROCESSES WITHIN THE PROJECT AREA

### 3.1 WATER FLOW REGULATION (MAINTENANCE OF WATER QUALITY, QUANTITY, TIMING)

Prolonged water availability, reduced water treatment costs, increased water quantities

#### Relevant PIL scoping issues -

• Potential impacts from post-leasing exploration and/or development could affect groundwater quality and quantity in the area.

**Direct beneficiaries** – Tribes, recreationist, hydro-power producers, domestic and municipal water users, species using aquatic and riparian ecosystems

Value information from Affected Environment Chapter – (see habitat value information for aquatic species)

**Driver information** – In BTNF, the potential for acidification of lakes and waterways from atmospheric deposition is high (4-138).

**Keyword search** – Water, Total Maximum Daily Load, drought, flood

#### 3.2 WATER FILTRATION/PURIFICATION

The capacity of an ecosystem to purify water

#### Relevant PIL scoping issues –

- Potential impacts from post-leasing exploration and/or development could affect groundwater quality and quantity in the area.
- Potential impacts from post-leasing exploration and/or development could occur to water quality and could affect habitat for fish and other special status aquatic species.

**Direct beneficiaries** – Plant and animal species, tribes, recreationist, domestic and municipal water users, irrigators, industrial water users

**Value information from Affected Environment Chapter** – Shallow aquifers are more susceptible to contamination, because a contaminant introduced at the surface can more rapidly enter the system with relatively little intervening soil adsorption (3-60).

**Driver information** – Minor effects on watershed, water, and soil resources, including increased erosion are probably unavoidable under all action alternatives, although stipulations for No Surface Occupancy in riparian areas reduce potential for adverse effects (4-204). Use of heavy construction equipment could

cause compaction of near surface soils, reducing the ability of the soil to absorb water and resulting in increased surface runoff and potential for ponding (4-52).

**Keyword search** – Water, filter, purification, purify, pollution, soil

#### 3.3 AIR QUALITY REGULATION

Capturing/filtering dust, chemicals, gases

### Relevant PIL scoping issues -

 Potential impacts from post-leasing exploration and/or development could impact air quality and air quality-related values, with emphasis on cumulative effects because of extensive development in the Pinedale area and previously monitored exceedances of National Ambient Air Quality Standards for ozone in Sublette County.

**Direct beneficiaries** – Local residence, downwind communities, ecosystems

Value information from Affected Environment Chapter – Frogs are vulnerable to air-borne chemical toxins, which they absorb through their moist skin (3-130). Levels of total atmospheric deposition are lower at the Pinedale sites when compared to sites in the Bridger Wilderness. Higher atmospheric deposition levels are common at higher elevations in mountainous terrain. The Bridger Wilderness has a "total deposition levels of concern" status because total nitrogen and sulphur deposits are thought to be high enough to cause changes in aquatic community structure (3-159). This essentially means that the resistance of these ecosystems to change due to atmospheric deposition is thought to have been overcome. There are seven Wilderness lakes near the project area thought to be sensitive to change from atmospheric deposition (3-161).

Driver information - Dust and air pollution from energy development are of concern (4-28). The introduction of dust, and air pollution would be temporary during exploration, and longer- term (average of 2-40 years) if the field is developed and production occurs (4-30). There is the potential for air quality to be affected in the South Wyoming Range and Grayback Roadless Areas (4-33). Accidental explosions, fires, blowouts, oil spills and leaks cause potentially serious air pollution problems (4-138). The drilling and production of wells subsequent to leasing could impact air quality and air quality related values, with emphasis on cumulative effects because of extensive development in the Pinedale area and previously monitored exceedances of National Ambient Air Quality Standards for ozone in Sublette County (4-170). The protection of air quality is of great concern in the Upper Green River Basin, including the proposed project area. In light of ongoing and planned development in the Pinedale Anticline, Jonah fields, and the nearby LaBarge Platform, local citizens have expressed concerns related to decreased visibility, increased dust, high levels of ozone and other hazardous air pollutants (4-170).

**Keyword search** – Air, dust, pollution, chemical

#### 3.4 **POLLINATION**

The contribution of animals to the reproduction of plants

**Relevant PIL scoping issues – none** 

**Direct beneficiaries** – Farmers, ranchers, ecosystems, plants

**Value information from Affected Environment Chapter** – Payson's milkvetch and Wyoming tansy mustard have a high intrinsic vulnerability that may be due in-part to pollinator limitations. Sweetflowered rock-jasmine, Shultz milkvetch, Boreal draba, and Weber's saw-wort have a moderate intrinsic vulnerability that may be due in-part to pollinator limitations. These species are Plant Management Indicator Species on the BTNF (3-138).

**Driver information – none** 

**Keyword search** – Pollination, pollinator

#### 3.5 **DISTURBANCE REGULATION**

Ecosystems can regulate the effects of floods, wildfires, wind events, avalanches, drought, landslides

**Relevant PIL scoping issues – none** 

**Direct beneficiaries** – Local property owners, irrigators, ecosystems, water users, species

Value information from Affected Environment Chapter – Aspen are in decline in part due to the alteration of the natural fire regime (3-142). Payson's milkvetch is in decline due to fire suppression (3-145). Loss or alternation of Lynx habitat can occur through fire events (3-72). Marten are rare or absent in forests that lack ground structure, such as those maintained under a frequent low fire severity regime (3-110). Northern-three-toed woodpeckers forage on dead (including fire-killed) trees. Threats to flammulated owl include successional trends to a more closed canopy and extensive wildfire (3-121). CRCT populations are limited in part by fire suppression (3-134). Drought conditions can persist on mule deer's low elevation sagebrush winter ranges, reducing survival during even more mild winter conditions (3-106). Drought is a threat to frogs and their habitat and the effects of drought may be exacerbated by management activities and land uses (3-130). Windswept ridges often serve as leks for sage-grouse (3-113). Payson's bladderpod is found on windswept ridge crests (3-145).

**Driver information – none** 

**Keyword search** – Fire, drought, landslide, avalanche, flood, wind

#### 3.6 **REGULATE INSECTS AND DISEASE**

The capacity of an ecosystem to regulate insects, disease, and invasive species through genetic and species diversity, spatial diversity, age-class diversity, and the actions of predators and parasites

### **Relevant PIL scoping issues – none**

**Direct beneficiaries** – Farmers, ranchers, ecosystems

**Value information from Affected Environment Chapter** – Sweet-flowered rock-jasmine, Shultz milkvetch, boreal draba, and Weber's saw-wort have moderate intrinsic vulnerability, which may be due in part to a predisposition to disease. Payson's milkvetch and Wyoming tansy mustard have a high intrinsic vulnerability, which may be due, in part, to a predisposition to disease (3-138). Bighorn sheep populations are in decline in part, it is believed, due to disease (3-118).

**Driver information** – Unsanctioned, illegal, or unintentional introductions of invasive species are aided by road access (4-137). Action alternatives for this project would add potential for noxious weed introduction proportionate with the areas disturbed (4-161).

**Keyword search** – Insect, disease, invasive

### 3.7 EROSION REGULATION

Soil retention and the capacity to regulate soil erosion

**Relevant PIL scoping issues – none** 

**Direct beneficiaries** – Surface water users, farmers, ranchers, ecosystems, aquatic species

**Value information from Affected Environment Chapter** – Extensive beaver pond development and dense willow growth on creeks blunts erosion forces of high spring runoff (3-134).

**Driver information -** Some irretrievable soil loss/displacement related to road, pipeline, well pad construction, and other field development facility construction would occur (4-203).

**Keyword search** – Erosion

#### 3.8 CLIMATE REGULATION/CARBON SEQUESTRATION

Long-term storage of greenhouse gases in ecosystem

**Relevant PIL scoping issues – none** 

**Direct beneficiaries** – Humans, species, and ecosystems vulnerable to climate change

**Value information from Affected Environment Chapter** – Aspen are in decline indirectly from climate change (3-142). Climate change is predicted to have a greater effect on average temperature changes in the Northern Hemisphere (3-155). Climate change could have profound impacts on Canada lynx within the project area (3-67). There are concerns about the impacts of global warming on whitebark pine seeds (3-67).

**Driver information – none** 

**Keyword search** – Climate, sequester, sequestration, carbon, storage

# 4. CULTURAL SERVICES – NON-MATERIAL BENEFITS OBTAINED FROM THE PROJECT AREA

### Relevant PIL scoping issues -

- Potential impacts from post-leasing exploration and/or development could change the backcountry recreation setting, detracting from the quality of recreation opportunities in the area.
- Potential impacts from post-leasing exploration and/or development could affect cultural and visual resources.

# 4.1 PROTECTING AND CONTEXTUALIZING CULTURAL SITES AND REGULATING THE USE OF CULTURAL SITES

Providing protection from the deterioration of cultural sites, providing contextualization of cultural sites, regulating the use of cultural sites

**Relevant PIL scoping issues** – (above)

**Direct beneficiaries** – Tribes, academics, tourists, local residents

Value information from Affected Environment Chapter – "Sense of place" is a term used to describe the values that draw people to specific landscapes. It is an important component of culture and the self- identity of a society, and a major factor in the minds of many who responded to public scoping (3-25). The entire Wyoming Range is the traditional homeland of the Eastern Shoshone and Shoshone-Bannock Tribes. A number of sites have been recorded in the area, such as rock cairns, cairn alignments, and segments of the "Old Indian Trail", that may be considered "Traditional Cultural Properties" or sacred sites. These areas are still utilized by tribal members who continue to exercise traditional activities on National Forest System lands (4-33).

**Driver information** – Inadvertent damage and/or destruction of cultural and paleontological resources from increased visitation and surface disturbing activities would be unavoidable. Although mitigation measures include identification and mitigation for these resources prior to surface-disturbing activities, some unanticipated discoveries of unknown cultural and paleontological resources could occur (4-204).

**Keyword search** – Culture, cultural, sacred, place

#### 4.2 OPPORTUNITIES FOR RECREATIONAL EXPERIENCES

**Benefits to the individual**: 1) Solitude and escape from crowds and noise, 2) escape from stresses, 3) physical and mental challenge, self-reliance, practicing outdoor skills, 4) adventure and exploration, 5) a

sense of place, 6) insight, self-discovery, creative inspiration, 7) a connection to the past, 8) time with family and friends, 9) lasting memories, 10) connection to other cultures, 11) connection to your own culture. **Benefits to society**: 1) Increased knowledge and innovation, 2) improved physical and mental health, 3) improved interpersonal relationships, 4) improved land stewardship, 5) improved cultural stewardship, 6) improved quality of life, 7) improved economies

#### **Relevant PIL scoping issues** – (above)

**Direct beneficiaries** – Local residence, tourists, sportsmen, recreationist

Value information from Affected Environment Chapter – Timber and oil and gas exploration during the 1960s and 1970s resulted in a road system that is now used mainly for recreation (3-24). The Wyoming Range is considered a minor range by mountaineers and is considered part of one's back door wilderness and place of livelihood by many local residents yet has been overlooked by the public at large. This was until controversy over development shone a spotlight on the range and several guidebooks that serve recreationists looking to avoid crowds were published (3-25). Recreation activities in the Wyoming Range include hunting, fishing, horse packing, hiking, backpacking, car camping, general touring, and snowmobiling (3-26). The lease parcels considered in this analysis add to the potential for changing recreation settings and attributes of the land that are valued by the public (3-26). When asked if having recreation areas close to home improves quality of life, 83% of Wyoming resident respondents strongly agreed. Quiet/solitude, fishing access, and nature trail opportunities were rated high state-wide.

Big Piney, Marbleton, Pinedale, Rock Springs, and Green River make up a significant portion of visitors to the Wyoming Range. Although part of the attraction of the Wyoming Range is the lack of crowds seen in the Wind River Range and Jackson Hole areas, there is considerable recreation use, especially along popular roads near the margins of the range (3-28). Access to outdoor recreation consistently ranks among the top reasons people move to the Greater Yellowstone region (3-30). Many national forests are able to offer visitors only a choice between classified wilderness (much of it overcrowded) and roaded, developed settings; there is not much large backcountry left. Thus the Bridger-Teton is in a unique position to offer this setting in abundance, especially in the Wyoming Range (3-30). Backcountry areas fill a niche that classified wilderness does not, especially if the agency wants to manage wilderness for something other than recreation. In non-wilderness, backcountry uses can be allowed that do not comply with the Wilderness Act, such as mountain biking, use by motorized trail vehicles, winter shelters and hut systems; the Forest Service can allow for larger party sizes and construct facilities such as trail bridges for user convenience. Certain habitat manipulation projects, such as prescribed burns to benefit wildlife or installation of fish structures in creeks, are compatible in backcountry areas, whereas they might not be in wilderness (3-31).

All or parts of four inventoried roadless areas exist within the Recreation Analysis Area and just over 190 total acres of these areas are slightly overlapped by parcel boundaries (3-39). About 69% of the total acres of these areas are under a No Surface Occupancy stipulation in the 1990 Forest Plan. (Under the reduced leasing alternatives 2 and 3, 39 acres of inventoried roadless areas overlap parcel boundaries). For this

analysis the inventoried roadless areas are the 'special areas' identified in the nation-wide RARE-II and subject to the 2001 Roadless Area Conservation Rule (3-40). The area surrounding and including the lease parcels is known for its remote and primitive nature, relatively low human use, and opportunities for outdoor recreation including big game hunting, hiking and horseback riding, and snowmobiling (3-23). Winter recreation has been on the rise and this trend is expected to continue (3-36). The east slope of the Wyoming Range is known for its dependable snow pack and attractive terrain (3-36). The Horse Creek Management Area is a popular place for both snowmobiling and backcountry skiing (3-49). National Trails include the Wyoming Range National Recreation Trail, established primarily for hiking and backpacking, and the historically important Lander Cutoff of the Oregon Trail located in the southern part of the analysis area. These trails are not included in the reduced-acreage area (3-38). Several Wild and Scenic River candidates originate in the Wyoming Range, including North Piney and Middle Piney Creeks, Big Fall Creek, and LaBarge Creek. These creeks are not within the reduced-acreage analysis area (3-38).

**Driver information** – There is a concern about effects to the area's backcountry characteristics which would in turn affect recreation and related businesses that rely on the backcountry (4-3). Under Alternative 2, recreation visits to the Forest would probably increase due to the expected increase in population. Oil and gas leasing could impact a variety of resources in the study area; effects on these resources could indirectly impact the social values they contribute to, including recreational values. Recreation is expected to increase relative to population; however, this does not mean that the values of recreational experiences are also expected to increase. There is no data available that allows for a quantitative analysis of recreation and other social values affected by natural resources on the Forest. It is logical to assume that there will be a negative correlation between values not directly accounted for in the market place and oil and gas activity. If increases in recreational visits are attributed to an increase in Sublette County's population, the majority of additional visitor days would likely be experienced by local residents (4-16). Demands for recreation would likely increase due to increased population and greater visibility of the Forest (4-23). Issue identified during scoping: potential impacts from post leasing exploration and or development could change the backcountry recreation setting, detracting from the quality of recreation opportunities in the area. The existing qualities of the area (the essentially wild landscape, large backcountry areas, remoteness, relatively few people, fine scenery, and existing recreation roads and trails) provide valued opportunities for recreation. Noise, dust, air pollution, and other effects from energy development are of concern, as well as the potential for increased traffic on forest roads. Potential effects of the action alternatives on Forest recreation settings and experiences have to do with several aspects of energy exploration and development. Those aspects include effects on recreation setting, effects on sight and sounds,

changes to winter use and trails, changes to scenery, off- forest recreation effects, and changes to special areas including Wild and Scenic River eligible streams, inventoried roadless areas, and National Trails (4-28). There would be no direct, indirect or cumulative effects on hunting opportunities, recreation settings, character of the land, special areas, recreation uses or facilities on BLM or private lands, and no introduction of noise or un-natural lighting as a result of the No Action Alternative. However, activity in the area could occur as existing suspended leases are developed

and any of the effects described in this analysis could occur; existing leases do overlap with inventoried roadless areas or the corridors of eligible Wild and Scenic Rivers. For areas not within existing leases, the Wyoming Range Legacy Act withdrew the Wyoming Range from disposition under laws relating to mineral and geothermal leasing, therefore there will be no future leasing actions and effects from the withdrawn area (4-29). Potential effects on the recreation setting from roads, pipelines, well pads, and support facilities such as gravel pits, staging areas and collection facilities, sights and sounds of oil and gas activities, hazards from leaks, and effects of winter operations on existing snow trails could all occur under Alternative 2. Wells and associated pads, tanks, roads and pipelines would change the scenic character and recreation setting for at least some of the area being analyzed. The miles of road associated with these wells (half of which would use existing roads) would change the recreation setting in some areas. Whether this change is permanent or temporary depends on whether exploratory wells become producing wells and if the mitigation measures employed for effectively closing roads are no longer needed. It is possible that new and reconstructed roads that are currently closed could be left open for public use (if determined consistent with the travel planning process, and with Forest Plan road density guidance), thus permanently changing the recreation setting in those areas. Exploration would include considerable heavy industrial traffic, with an average of 70-75 truckloads to move a typical drill rig to a site, and noise from the drilling operation itself. This effect would probably not last longer than a few weeks per well, but it would likely take place during the time that most recreation use occurs in the summer and fall. Field production would include lighter traffic than the site construction and drilling phases, but industrial/truck traffic could still be considerable. In addition to the effects of traffic, Forest visitors would be aware of the presence of gas wells by the sight of pumps, condensate tanks and other support facilities, flaring on occasion (involving bright lights, smoke, and noise, although use of green well completions would minimize this), and in the case of a tight gas sand development, hydraulic fracturing to release trapped gas into the wells (4-29). According to the reasonably foreseeable development scenario for Alternative 2, about nine miles of new road could be constructed. It is possible that 3,000 acres could be converted from semi-primitive backcountry to a roaded setting. This figure would be the maximum possible under this alternative and it should be noted that this is very unlikely to occur since some of the new roads could be in places already classified as Roaded Natural due to their proximity to existing roads. Roaded Natural recreation settings are corridors of 1/4 to 1/2 mile on either side of open roads. It is most likely that some area less than 3,000 acres would be converted, but it is not possible to predict the amount without knowing the locations of proposed roads. The short-term and longterm effects could differ depending on whether recoverable energy reserves are found. New exploration roads could be made available for public traffic, converted to trails, or recontoured, depending on the management objectives consistent with travel planning for the area. Based on past exploration work

conducted within the Forest, most roads that would be built or upgraded would be high-standard roads with a gravel surface that could be used all year. With a 40+ year life expectancy for each well developed, these roads would remain on the landscape for at least that time period, and possibly beyond if they are deemed necessary as part of the Forest transportation system. The introduction of noise, drill rig lights, dust, and air pollution would be temporary during exploration, and longer- term (average of 2-40 years) if

the field is developed and production occurs. Dust and drilling noise would probably be most significant during the exploration and development phase and greatly reduced during the production phase. Full field development could have a significant effect on the general setting, due to the sights, sounds and odors associated with gas field production. Some of these effects can be mitigated with modern technology. As an example, the flaring that takes place on existing gas wells during initial production testing and potentially during occasional well maintenance can involve bright flames that would be visible from long distances. With the use of green well completions flaring would be minimized. However, green completion may be limited by access to pipelines. Flaring, when it does occur is a very short term activity. Part of the recreation setting that is valued in the Wyoming Range is the quiet and the remoteness from the sights and sounds of human development, clean air, and clear night skies. Without adequate mitigation, industrial development could intrude on this setting. Existing recreational uses of closed or little-used roads such as hiking, horseback riding and, where allowed, motor vehicle use, would be displaced if oil/gas traffic occurred on them. Safety would be a concern, especially in fall when recreation use is heaviest. Many camps, including established hunter and outfitter camps, exist in the road corridors; these may be affected in the short term by construction traffic and its accompanying noise and dust (4-30). In the long term the roads that are re-opened and reconstructed, whether managed for public use or not, would differ in development level and feel compared to the currently closed roads. Visitors could experience a dramatic difference between the current near-wilderness setting and that of an industrial setting, especially if well pads were placed near traditional hunting camps. Outfitters could possibly lose clients (especially repeat business from people who have come to expect a certain experience) or would have to move their operations. A relatively small acreage (during the exploration phase) would be directly disturbed by construction of well pads, roads and pipelines. This does not include any additional disturbance from gravel pits, staging areas and gathering facilities. Long-term disturbance would affect a smaller acreage because unused portions of well pads would be reclaimed and revegetated, as well as any road ditches and pipeline routes. Less area is needed for field production than for exploration and development operations. Well sites monitored remotely or accessed primarily by over-snow vehicles in winter could be plowed anytime if necessary to deal with a problem or to truck out materials. Some effect on current winter recreation would take place, since many of the groomed winter trails follow Forest roads. If roads that are currently used as winter trails are plowed to oil/gas developments, existing winter recreation would be displaced. In some locations this effect could be mitigated by providing alternate parking areas for public use. Possible effects on special areas could occur from roading and a resulting increase in vehicle access, noise, lights, and air pollution. Roads and facilities could be visible from trails, backcountry, and inventoried roadless areas, especially at night if there are lights. Mitigation with shrouds could be applied to this short term effect, and production activities normally do not need permanent lighting (4-31). If a gas field was developed, the noise of the field and the sight of its lights would be noticeable from part of the Wyoming Range National Recreation Trail. In addition, direct effects are possible on the south end of the historic Lander Cutoff of the Oregon Trail. These effects could be mitigated by using green well completion, and shrouding lights. However, green completion may be limited by access to pipelines. Whether or not locating wells away from the trail would be adequate for

protecting the trail setting is dependent on site-specific terrain and vegetation (4-34). There would likely be some effects on recreation settings on BLM land near the Forest, especially where the primary recreation access roads pass trailheads and dispersed campsites on BLM land. The forks of Horse, Cottonwood, and Piney Creeks are accessed via roads to the east and U.S. 189; these roads are narrow and some have tight curves. They would be used for both recreation and oil and gas activity. Indirect effects here would be similar to those identified above for the Forest including increased traffic, noise, etc. Heavy equipment on state and county roads would be present, especially during the construction and drilling phase. This would create some conflict with recreation uses and may pose a concern about public safety. In the event of field development, noise, lights, and gas well flares could be noticeable from BLM and some private land, however mitigations including green well completion and shrouding of lights could reduce these effects. The opportunity for green completions would be dependent on access to pipelines (4-34).

**Keyword search** – Recreation, hunt, fish, snow, trail, road, tour, solitude, culture

#### 4.3 OPPORTUNITIES TO EXPERIENCE SCENERY

Improved quality of life, sense of place, economies, and knowledge

**Relevant PIL scoping issues** – (above)

**Direct beneficiaries** – Local residence, tourists, recreationists

**Value information from Affected Environment Chapter** – In the past decade or more, the region's economy has been driven more by the attractiveness of communities as places to live than by tourist dollars. Scenery, wildlife, and open space consistently rank among the top reasons people move to the Greater Yellowstone region (3-30). For both backcountry travelers and users of the roads and dispersed campsites, the opportunity to see wildlife and enjoy scenic settings is very important (3-31). The Bare Pass Road (Forest Road 10146) in the Cottonwood Creek Management Area is a very scenic drive with the unique views of the Red Castles, large, deep beaver ponds, and views of the Wyoming Range from Darby Mountain to Triple and Lander Peaks (3-49). The Piney Creek Management Area has many trails that offer non-motorized users the opportunity for wildlife viewing and scenic waterfalls (3-51). Residents of the Pinedale area consider visibility impairment to be a major concern (3-156). Views of Lander and Triple Peaks, Wyoming Peak and the southern Wyoming Range, as well as across the Upper Green River basin to the Wind River Range from the Red Castles, are outstanding (3-44). Distant views from high points such as Wyoming Peak are spectacular (3-45).

**Driver information** – Noise, dust, air pollution, and other effects from energy development could affect the scenery of the area (4-28). Under Alternative 2, the sights and sounds of energy activity would be noticeable from the Wyoming Range Trail and other viewpoints in the area (4-46).

**Keyword search** – Scenery, scenic, view

# 4.4 EXERCISING TREATY RIGHTS AND OTHER RESERVED RIGHTS IN ABORIGINAL AND CEDED LANDS

Increased awareness of treaty rights, continued relationships with the land through co-management, traditional ecological knowledge and traditional ecological practices, continued intergovernmental relationships, continued cross-cultural exchange, other benefits listed for the three services above

**Relevant PIL scoping issues** – (above)

**Direct beneficiaries** – Tribes, governments

**Value information from Environmental Effects Chapter – none** 

**Driver information – none** 

**Keyword search** – Tribe, treaty

# **Ecosystem Services Survey Analysis**

# Analysis of Data Point One: The Keyword Search and Word Count

A keyword search of the Affected Environment and Effects Analysis chapters of the Oil and Gas Leasing in the Wyoming Range FSEIS was performed. The verbiage from those keyword 'hits' was sorted by ecosystem service and were categorized as either information about the values or drivers of the ecosystem service. This process revealed how much verbiage in the FSEIS Affected Environment and Effects Analysis chapters was committed to each service and whether that information had to do with the values associated with the service or the impacts that the proposed alternatives would have on that service.

Word count was then used to rank each ecosystem service based on the number of words committed to values information about a service and by the number of words committed to discussion about how the service might be negatively affected by the oil and gas development. This keyword and word count analysis revealed that species habitat and opportunities for recreation experiences received the most verbiage categorized as 'values information', followed by animal protein, opportunities to experience scenery, and water flow regulation. These services were followed by forage, disturbance regulation, air quality regulation, and protecting and contextualizing cultural sites and regulating the use of cultural sites. The ecosystem services with the most verbiage committed to how oil and gas development might negatively affect them were species habitat and opportunities for recreational experience. These were followed by fresh water, air quality regulation, and animal protein. Next were forage, water filtration/purification, protecting and contextualizing cultural sites, and opportunities to experience scenery. Verbiage regarding species habitat in the Affected Environment Chapter of the FSEIS focused on a wide array of species that may exist in the project area or that may be affected by development in the project area, including big game species, lynx and other predator species, small mammals, amphibians, fish, and plants. Values verbiage for opportunities for recreational experiences emphasized the value of the area for local and regional populations, especially for recreation in backcountry areas that provide a unique niche for recreational uses such as mountain biking, motorized trail use, and backcountry hut use in a backcountry setting. Verbiage regarding the production of animal protein focused on domestic livestock production, prey availability for lynx, and other predators, and hunting opportunities for humans. Verbiage regarding forage production focused on seasonal forage availability for big game species, grizzly bears, sage grouse, and livestock. Verbiage regarding air quality regulation focused on the effects of atmospheric deposition on amphibians, aquatic community structure, and lakes, especially at higher elevations. Verbiage regarding opportunities to experience scenery focused on the benefits that local communities receive from scenery and wildlife viewing and the effect of these amenities on local communities.

# Analysis of Data Points Two and Three: Ecosystem Service Surveys with Local Decisionmakers

### Data Point 2: Survey of a Key Informant: Forest Service Line Officer

On Thursday, May 21 2015, a phone survey was conducted with Big Piney District Ranger Rob Hoelscher regarding the ecosystem services of the Wyoming Range project area. The Ranger had reviewed the Ecosystem Services Briefing Paper and Survey before the call. In the survey the Ranger expressed that the most important ecosystem services (+3) to society that come from the project area were species habitat and water flow regulation. The next most important ecosystem services (+2) were air quality regulation, fresh water, and opportunity for recreational experiences. On the next tier of importance (+1) were protecting and contextualizing cultural sites and regulating the use of cultural sites,

erosion regulation, water filtration/purification, and opportunities to experience scenery. The Ranger expressed that the two ecosystem services that would likely be most positively affected (+3) by oil and gas development were fuel and building materials. On the next tier (+2) were erosion regulation, plant varieties for revegetation, and disturbance regulation. The Ranger expressed that the two ecosystem services that would likely be most negatively affected (-3) by oil and gas development were species habitat and opportunities to experience scenery. On the next tier (-2) were air quality regulation, fresh water, and water flow regulation. During follow up questions, the Ranger expressed that the reason fuel and building materials would likely be positively affected by oil and gas development was that oil and gas development was likely to improve access to forest products, including firewood and timber for building materials. The Ranger expressed that erosion regulation would likely be positively impacted because oil and gas development would necessitate road improvements and those road improvements would include improved erosion control. The Ranger expressed that his ranking of ecosystem services was a ranking based on the relative importance of these ecosystem services and should not be taken in absolute terms.

Also, the Ranger said the he felt that the ranking would likely change if he were to have a discussion about these ecosystem services with resource specialists on the Bridger – Teton National Forest.

### Data Point 3: Survey of a Key Informant: County Commissioner

A phone survey of Sublette County Commissioner Joel Bousman was completed on April 16 and May 27, 2015 regarding the ecosystem services of the Wyoming Range project area. Commissioner Bousman had reviewed the Ecosystem Services Briefing Paper and Survey before the calls. In the survey, Commissioner Bousman expressed that the most important (+3) ecosystem services to society that come from the project area were forage and opportunities for recreational experiences. The next most important (+2) ecosystem services were fresh water, building materials, and fuel. On the next tier of importance (+1) were erosion regulation, animal protein, opportunities to experience scenery, and disturbance regulation. Commissioner Bousman expressed that the two ecosystem services that would likely be most positively affected (+3) by oil and gas development were building materials and fuel. The Commissioner expressed that opportunities for recreational experiences could be either positively or negatively affected by oil and gas development. He said that on the one hand, oil and gas development could improve access to recreation; on the other hand, it could be a detriment to the recreation experience through a disruption of the scenery. Commissioner Bousman expressed that ecosystem services likely to be most negatively affected by oil and gas development (-3) were forage and scenery. On the next tier (-2) were animal protein and air quality regulation.